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electron user

Vol. 7 No. 1 October 1989 £1.25

BIRTHDAY 6th ISSUE

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REVIEWS

Rodeo Games, Hi Q Quiz and Spooksville tested by our games experts

FEATURES

Help with Exile and a DIY Electron carry case for you to build

LISTINGS

Spinning Frustration, Jet Bike, Robokill and disc menu creator

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The Last Ninja

The secrets of the Ninjitsu way had been jealously guarded for centuries,only once every decade were the scrolls seen at the ritual of the White Ninja. None coveted these secrets more than the evil Shogun. Seizing the opportunity of the ritual he sprang a fiendish trap that destroyed the brotherhood, except for one... You. The Last Ninja.

Your sworn oath is to recover the scrolls, you travel to the mystical lands of the Shogun. Already his guards are mastering the ways of the Ninjitsu. To reach the Shogun's Palace you must use all your weapon craft and fighting skills as you travel through dangerous wastelands and magnificent gardens, then descend into the direst dungeons before the final confrontation.

To order please use the form on page 45

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OVER 8's Older children face the challenge of an adventure game combined with a series of short puzzles. Seven of the programs are self contained but each of these has to be solved before the eighth title can be tackled.

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A fortune in your keyboard

THE first pools predictor for the Electron has been launched by Blue Ribbon (0302 321134). System 8 – The Pools Predictor aims to increase the chance of a win by using a stored database compiled from previous results to calculate the possible outcome of current matches.

It predicts results in the four English and three Scottish leagues and also makes filling in the coupon easier. A perm against plan option displays the punter's selection ready to be copied directly on to the coupon.

The week's data can be entered then saved for future reference by using the save data option.

"The only thing it can't do is lick the stamp", said Mal Thomas, marketing manager of Blue Ribbon.

System 8 – The Pools Predictor costs £2.99.

"I pawed your listing in correctly, but it still won't run"

The Electron that leads a dog's life

FOR seven days hundreds of clever canines weaved through poles, padded over seesaws and leapt fences. The country's largest dog agility event was voted a huge success – and it was largely due to an Electron computer.

The contortions of these agile animals and their sprinting owners have turned into a boom sport, but its popularity has given Tony Veal a headache.

For six years he has organised the huge South of England Agricultural Society dog agility and obedience show in Sussex, but it became such a daunting task this year that he resorted to Electron help.

It was an unlikely step for a self confessed "non-computer" person, but with a program specially compiled by his friend Paul Gaffney, Tony slashed the organisation time for the show and is now a total convert to the Acorn machine.

Using the Electron proved so successful that Paul's program may now be taken up by organisers of other dog shows throughout the country.

Known to thousands of young viewers as the dog agility consultant on BBC TV's Blue Peter, Tony is a self-employed salesman from West Kingsdown, Kent and met Croydon-based Paul through business.

"When Paul suggested a computer I thought it would be useless", he told Electron User. *"He persuaded me and then spent nine months writing the necessary program. In the end it was marvellous. It saved me weeks of work".*

The Electron program printed entry listings, competitors labels and made random draws for up to 250 dogs in each class. It also dealt with the payments for camping fees over the seven days, the accounts for social events throughout the week and many other administrative tasks.

Teamed with a Pegasus disc system from Slogger and a Panasonic KX-P1081 printer, the dog show software was developed on Paul's 32k Electron then used on the 64k Electron bought specially by Tony.

Video in the office

ELECTRON owners who opt for Mini Office, the small business package from Database Software (0625 878888), stand the chance of winning a £500 video recorder.

As sales of Mini Office approach 500,000, Database will present a Sony SLV 401 to the buyer of the half millionth copy revealed by registration cards. The video recorder features slow motion digital effects, perfect pausing, picture in picture and editing.

Launched in October 1984, the original Mini Office broke the price mould for business packages when it was offered for the BBC Micro and Electron at £5.95. It was also the first business package to enter the software charts.

Time called on the pub pirates

A SWINTON licensee took swift action when FAST (The Federation Against Software Theft) stepped in to tell him an illegal software copying den was being run in the back room of his pub.

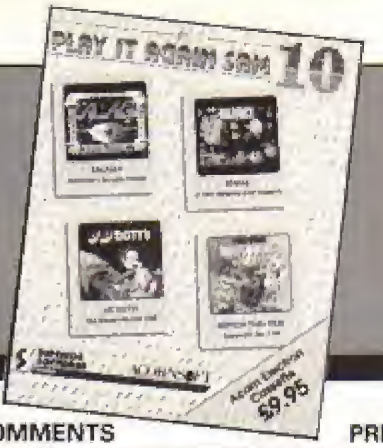
John Heaton of The Beehive Hotel, Swinton, called time on the pirates and vowed they would never return.

FAST was tipped off about the piracy meetings by a software dealer whose staff had gone along to see what was going on.

Members of Bolton Computer Club and Swinton Computer Club were believed to be involved but officials of the clubs have stressed that the undercover activities were entirely unofficial and in no way condoned by them.

"It was so blatant", said a spokesman for FAST. "They apparently moved into the pub, set up their machines and started copying. We are sure that copying has now ceased in the pub concerned but you can never be certain that it has not moved somewhere else".

Gallup Software Chart



THIS MONTH	LAST MONTH	TITLE (Software House)	COMMENTS	PRICE
1	•	PLAY IT AGAIN SAM 10 *Superior*	The latest but not the last of the Sam compilations. This one re-runs Zalaga, 3D Dotty, Repton thru Time and debuts Owak.	9.95
2	▲ 8	JOE BLADE 2 *Players*	The graphics are good and the game very playable. The puzzle screens are wicked and will keep you busy for hours.	1.99
3	▲ 9	YIE AR KUNG FU *Hit Squad*	There have been many clones of this and any combat game is invariably compared to it. A nice trip into meaningless violence.	2.99
4	•	SOCCER BOSS *Alternative*	Back into the charts again this month. Not very new but if you fancy your chances for soccer boss stardom, then try this one out.	1.99
5	•	BALLISTIX *Superior*	Cross between pinball and shove ha'penny. Original, fun and very addictive. A new challenge – different and full of surprises.	9.95
6	▼ 2	SPOOKSVILLE *Blue Ribbon*	Ghost hunting time again. An arcade adventure, simple and a little dated now. Good value though as you search for your spellbook.	2.99
7	•	RETURN OF R2 *Blue Ribbon*	Should be entitled the Return of the Return. A budget game on a budget label. Not bad value and will while away an hour or two.	1.99
8	▲ 13	RAVENSKULL *Blue Ribbon*	A classic and a bargain even at full price. This excellent arcade adventure will have you enthralled for days.	2.99
9	▲ 11	GRAHAM GOOCH TEST CRICKET *Alternative*	Originally released by ASL, it is more suited to the budget label. Recommended if you are totally disheartened with the Test season.	1.99
10	▲ 20	STORMCYCLE *Atlantis*	Save Earth from imminent invasion and disaster by finding five diodes, killing the enemy and beating the clock.	1.99
11	•	TURF FORM *Superior*	Another returning to the charts – after the good going for the racing season you may feel lucky. Test your skill all you have to lose is £1.99.	2.99
12	▼ 5	PREDATOR *Superior*	Here is your chance to take on the mantel of Schwarzenegger to rescue the diplomats and destroy the marauding alien.	9.99
13	▼ 4	GALAFORCE *Blue Ribbon*	One more from the Superior/Blue Ribbon deal to bring you the classics of yesteryear at a budget price. Well worth the money.	2.99
14	•	GOLF *Blue Ribbon*	Going back to the sporting theme, drive, putt and birdie your way through a variety of courses and obstacles.	1.99
15	•	REPTON 2 *Blue Ribbon*	Surfacing again, this is one of a variety of opportunities to obtain Repton 2 and complete the tale of the little green adventurer.	2.99
16	•	CITADEL *Blue Ribbon*	A classic of Ravenskull proportions and a great way to introduce anyone to games on the Electron. Superb.	2.99
17	•	INDOOR SOCCER *Alternative*	If you are tired of the outdoor variety it is probably time to go inside. Not the best football implementation though.	1.99
18	•	MINI OFFICE *Alternative*	Now available at a budget price this is a integrated package – a good introduction to more serious applications.	1.99
19	•	PERCY PENGUIN *Blue Ribbon*	Not quite in the league of Citadel or Ravenskull, but fun, nice looking and very enjoyable to play. At only £1.99 it's a bargain.	1.99
20	•	STEVE DAVIS SNOOKER *Blue Ribbon*	Yes he's back again – and if there is anyone out there who hasn't yet played this game, do so. A budget game at a budget price.	1.99

Product: Buffalo Bill's Wild West Rodeo Games
Price: £9.95 (tape) £11.95 (disc)
Supplier: Tynesoft, Addison Industrial Estate, Blaydon, Tyne & Wear NE21 4TE.
Tel: 091-414 4611

GOLDEN electron user GAME

Yeeee... Haaaaa!

TO say that Buffalo Bill's Rodeo Games is an immaculately programmed and superbly presented package would be an understatement – this game is a classic. Not only are the six events extremely playable, they are also crammed with sound effects and illustrated with some of the best colour displays I have seen on the Electron.

Up to four players can enjoy the events, the first being the **Trick Shooting**, a difficult test of hand-eye coordination. Superimposed on a desert background is a floating gunsight, the vertical and horizontal movement of which is under your control.

One by one, a series of cardboard cut-out characters begin to flip up with increasing regularity and you must knock them down again before the brief time limit expires and they fall automatically. Variety is provided with the inclusion of good guys who should not be gunned down and vultures that can be plugged for a handsome bonus.

The fun continues in true western style as you enter part two of this event. A lone character tosses bottles into the air which act as flying targets and a real test of marksmanship.

Each event is followed by a resounding *Yee-ha* and very impressive league table. Staying with the target practice theme, we move on to event number two – the **Knife Throwing**.

Following a dramatic increase in scale we are treated to the view of an Indian squaw strapped tightly to a rotating wheel as she trustingly waits for her partner to launch eight-inch, razor-sharp blades in her general direction. The tension builds as each blade thuds into the spinning wheel, surely your luck – or should it be hers? – can't hold out much longer. Finally the inevitable happens and the badly judged projectile elicits a scream from the unfortunate assistant.

Calf Roping is the order of the day as we reach the half-way stage of Bill's Wild West extravaganza. An aerial view is used to follow the progress of galloping calf and pursuing cowboy. The trick is to ride alongside the animal and then throw a rope around its neck without taking a tumble yourself.

This is easily the most difficult event so far, since the mini steer has no intention of giving up peacefully and will try its best to unsaddle you – a technique at which it is most competent.

I found the **Bronco Riding** by far the briefest of the six events – especially when I was playing. Sat astride a fiercely bucking bronco, your sole objective is to stay in contact with your mount. An arrow system indicates the direction in which you are currently overbalancing, your job is to pound the key to move you in the opposite direction. It's not easy.

Steer Wrestling is similar in many respects to calf roping. A gallop at full speed followed by an athletic leap on to the charging steer and you are expected to pit your 12 stone frame against over a tonne of thrashing bone and muscle. No mean feat for Arnold Schwarznegger, yet your fearless reviewer's keyboard bashing technique was more than man enough for the job.

In event number six you are called upon to retrieve a stagecoach that has been stolen by rogue indians. By pumelling the Z and X keys you gallop towards the speeding vehicle with the intention of leaping aboard when alongside. Unfortunately the indian on the roof has other ideas and continually tosses the passengers' luggage in your path.

Once on the stagecoach you climb to the roof and slug it out with the renegade redskin. The loser is the one who falls from the still speeding coach.

All of the events consist of three separate rounds, often of increasing difficulty. A very welcome feature that Tynesoft implemented is the replay facility – at the end of the third round you are always offered an opportunity to play the complete event again.

Buffalo Bill's Wild West Rodeo Show is the best multi-event game to be released for the Electron this year. It is a product that further reinforces Tynesoft's mastery of this genre of game. Yee-ha!

James Riddell

SecondOpinion

Another in a long line of multi-part games from Tynesoft, and it's sure to be a winner. The variety of games, the superb graphics and addictive gameplay means you won't tire of this package as quickly as some of the cheaper offerings currently on sale.

Janice Murray

Graphics	*9*
Sound	*9*
Playability	*9*
Value for money	*10*
Overall	*9*

Haunting

Product: Spooksville
Price: £2.99 (tape)
Supplier: Blue Ribbon Software, CDS House, Beckett Road, Doncaster DN2 4AD.
Tel: 0302 321134

IN Spooksville, you play the part of Gaston the Intrepid who is trying to find a spellbook stolen from a great magician many centuries ago by Count Dracula.

The spells can only be used every 500 years, and that time is just about due. The book is hidden in the town of Spooksville – so in you Gaston, jolly well go to face Frankenstein, Dracula and sundry other horrors.

This torrid scenario paves the way for another arcade adventure game in the style of that old favourite Citadel. The graphics and sound are also closely based on the older game.

Gaston can travel left and right, as well as up and down ropes and ladders. From time to time objects found may help solve the game. For example, the stake will kill Dracula and the barrel will enable Gaston to escape from Frankenstein's lair. Other objects include crosses, holy water, rope, a lamp, gold bars, fireballs, a rod and a sword.

A fairly comprehensive "what does what" list is given in the instructions. Essential to success are the ring – hidden in the crypt – and the scroll, one of the few items whose location and purpose is not revealed before you start.

Old time Citadel players will remember the ghostly cloaked figures which needed a magic spell fired between the eyes to remove them from screen. Spooksville has these, or similar figures, in abundance.

In fact, there is one in every room except the starting screen and all need to be shot smartly in order to survive. A strange feature of your weapon is that you must be moving when you fire it.

Its range is short so don't fire till you see the red of their eyes. Tall monsters can't be destroyed by the standard technique – it is essential to find the correct object to dispose of them.

This is yet another budget game which has not been written well on the Electron. If you can imagine playing Citadel with your feet stuck in syrup then that's what you've got here. Mind you, things are changed out of all recognition if you own a Slogger Turbo. Then the game is almost too fast, but certainly playable.

I would strongly commend the original Citadel as a far more interesting game, but if you've completed that Spooksville will do at a pinch.

Rog Frost

SecondOpinion

This is another spin-off based on the highly succesful Citadel. While not quite matching up to the original, it is nevertheless very enjoyable. If you like this sort of game then at only £2.99 it represents a bargain and will provide many hours of entertainment.

Roland Waddilove

Spookville is similar to that old favourite, Citadel

Trivial touch

Product: Hi Q Quiz
Price : £2.99 (tape only)
Supplier: Blue Ribbon, CDS House, Beckett Road, Doncaster DN2 4AD.
Tel: 0302 321134

EVERY once in a while a software house produces something that is so out-dated and run-of-the-mill that you wonder why it ever bothered. Blue Ribbon has done this with its latest release, Hi Q Quiz.

Basically a budget version of Trivial Pursuit, the board consists of a wheel with four spokes, around which each of the two to four players move. Each segment on the wheel and spokes bears a symbol which indicates the type of question that you have to answer when you land on it – sport, sciences, history/art and natural history.

The questions vary in difficulty from easy: *What is the name given to a baby cat?* To relatively hard: *Where were the 1932 Olympics held?.*

The questions are randomly selected from data files which don't seem to be large enough to prevent repetition – the same questions keep turning up and the one about the venue of the 1960 Olympics has been asked in every game I've played.

There are four levels of play, the higher you select, the more questions you need to answer to win. Success goes to whoever answers the required number of questions in each category and then returns to the centre and gives the correct answer to a final randomly selected question.

You stop the roll of dice on screen by hitting the spacebar then use the cursor keys to move your marker. You can set a device to limit the time in which the questions have to be answered and there are segments which allow you to roll again if you land on them.

There are a few differences between Hi Q Quiz and Trivial Pursuit, but not many. For instance, you can't pass over a segment occupied by another player's marker and you can't pass through into the centre unless you roll the exact number needed. Even then you can go there only if you have answered enough questions to qualify for the final one.

The graphics are a bit squashed to make room for as many segments as possible, and

as such the game looks cluttered. Sound is minimal – the rolling dice give a random toned chattering and you get one of two different noises depending on whether or not you answer a question correctly.

There is also a little jingle at the end when the game declares the winner – and that's just about it.

To sum up, the game is fairly cheap, the whole thing takes just a few minutes to load in by tape and occasionally comes out with some tough questions. It is simple to play and contains elements that would make it a fairly nice piece of educational software for the young.

However, it fails badly as a quiz for those with a reasonably high IQ and would only just make a passable magazine listing game. There isn't even a facility for entering the players' names. I can think of much better ways of spending three quid.

Desmond

SecondOpinion

I was initially confused by this trivia quiz as the correct answer is always displayed on the screen following the question. The idea is that you ask your opponents the question and press Y or N depending on whether he or she answers correctly.

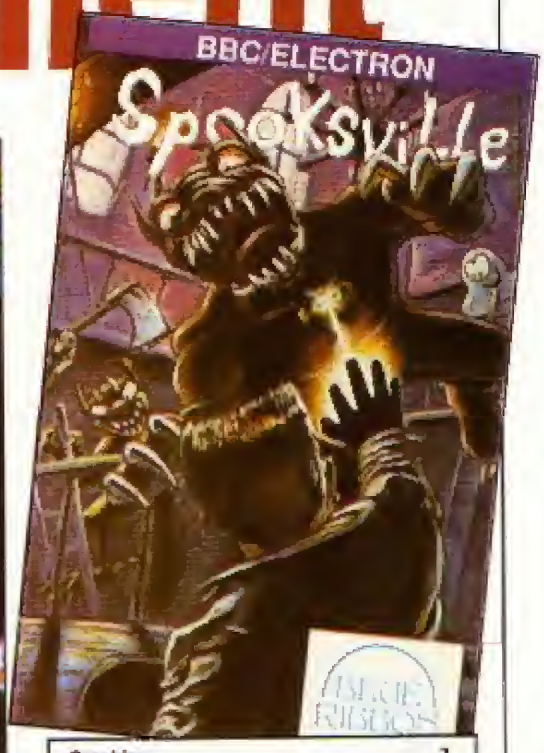
Once I had got the hang of it, I quite enjoyed it. Not as much fun as the board game, but still quite good family entertainment.

Janice Murray

Graphics	6
Sound	5
Playability	4
Value for money	6
Overall	5

Entertainment

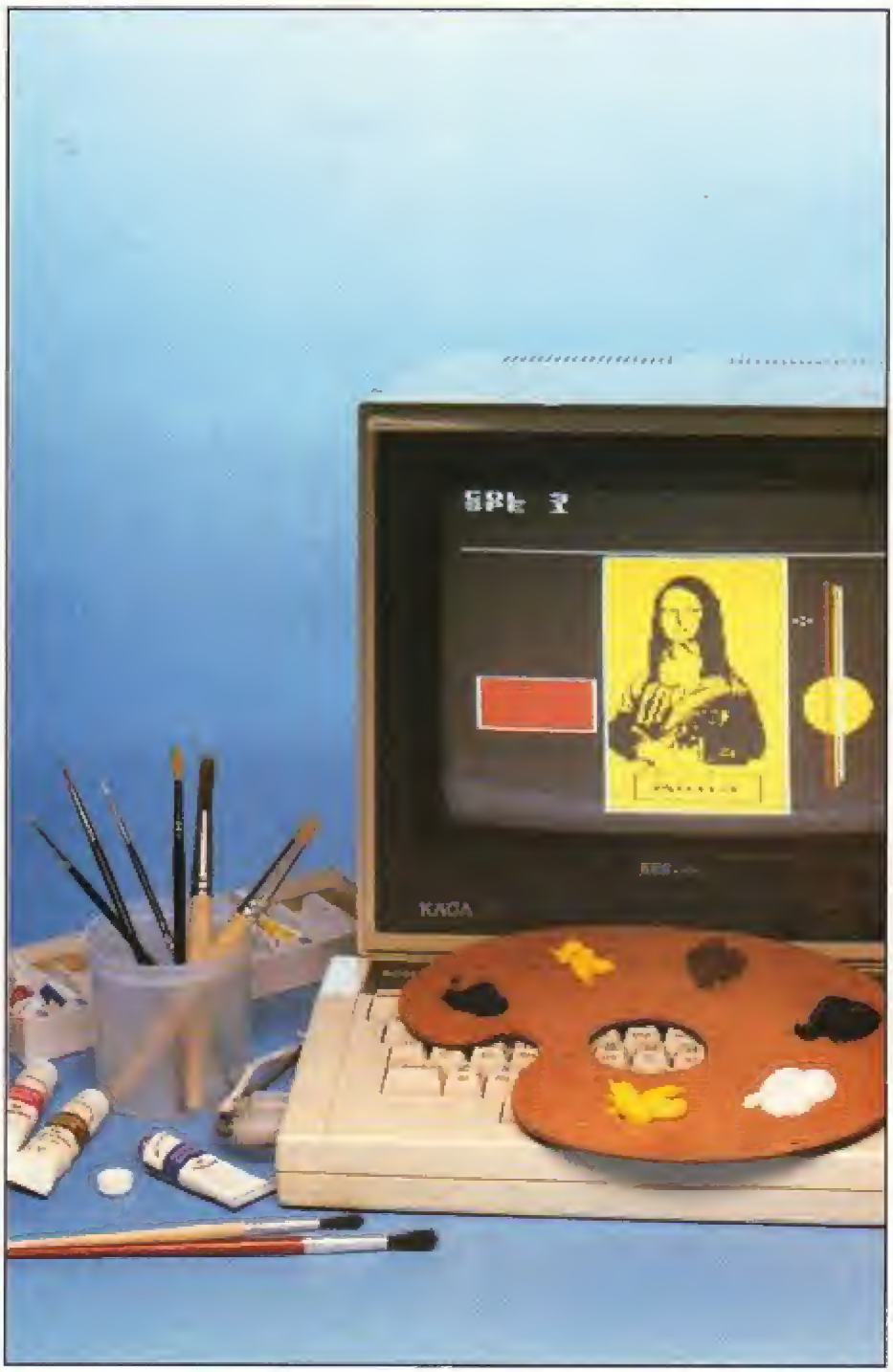
Play is quite slow, and is much better with a Turbo



Graphics	7
Sound	5
Playability	6
Value for money	7
Overall	7

Electronic artistry

Show off your hidden talents with Stuart Bain's paint program



ELKPAINT is the most powerful art package available for the Electron and includes many features that have not been seen before in previous art software.

It was written after seeing the wide range of facilities available in Photon Paint running on the Commodore Amiga. Not wishing to be outdone, here's a rival package for the Electron.

Elkpaint runs in four colour Mode 5. The colours are chosen by pressing keys zero to three. The Z, X, * and ? keys move the cursor and there are six different speeds – set them by pressing Shift+1 (slow) to Shift+6 (fast). Both colour and speed can be changed at any time.

Rubberbanded lines can be drawn. Move the cursor to start position and press B. The line will then follow the cursor. Fix the line by

VARIABLES	
X%,Y%	Cursor coordinates
col%	Colour
sp%	Speed
s%(24)	Table of sin values

```
   10REM Elkpaint by Stuart Bain
   20REM (c) Electron User
   30ONERRORMODE6:REPORT:PRINT" a
t Line ";ERL:END
   40MODE5:PROCinit:MOVE0,836:DRA
W1279,836:VDU24,0;0;1279;831;23,1
,0;0;0;0;
   50PRINTTAB(0,0)"COL 3"'"SPE 1"
:PROCcurs(X%,Y%):PROCscr(0)
   60REPEATPROCmove:IFK%=66PROCba
nd ELSEIFK%=67PROCcirc ELSEIFK%=8
2PROCrect
   70IFK%=69PROCellip ELSEIFK%=70
PROCfill ELSEIFK%=87ORK%=81PROCwi
pe
   80IFK%=77PROCzoom ELSEIFK%=80P
ROCcut ELSEIFK%=65PROCbrush
   90IFK%=83PROCscr(0)ELSEIFK%=85
PROCscr(1)ELSEIFK%=84PROCtext
  100IFK%=76ORK%=75PROCfile(K%-75
)
  110PRINTTAB(0,3)SPC14:UNTIL0
  120DEFPROCmove
  130K%=INKEY0:*FX15
  140IFK%>32ANDK%<39sp%=8*(K%-32)
:PRINTTAB(4,1);sp%DIV8ELSEIFK%>47
ANDK%<52col%=K%-48:PRINTTAB(4,0);
col%
  150x%=X%:y%=Y%:X%=X%+(INKEY-98-
INKEY-67)*sp%:IFX%<0X%=0ELSEIFX%>
1279X%=1279
  160Y%=Y%+(INKEY-105-INKEY-73)*s
p%DIV2:IFY%<0Y%=0ELSEIFY%>831Y%=8
31
  170PROCcurs(x%,y%):PROCcurs(X%,
Y%)
  180ENDPROC
  190DEFPROCcurs(A%,B%)GCOL3,3:MO
VEA%-24,B%+12:VDU5,225,4:ENDPROC
  200DEFPROCbp:SOUND1,-10,170,2:E
NDPROC
  210DEFPROCband
  220PRINTTAB(0,3)"RUBBER BANDING
":REPEATrx%=X%:ry%=Y%:GCOL3,3:PLO
```

pressing the spacebar and continue with another, or press Return to fix it and exit rubberbanded mode.

Circles are simple. Move the cursor to the centre and press C. The dotted circle will follow the cursor. Press the spacebar to draw the circle and continue with another from the same centre, or press Return to draw it and exit circle mode.

Ellipses are drawn in the same way as circles, except that you press E instead of C.

To draw a rectangle press R to fix one corner then drag the rubberbanded box to the correct size. The spacebar fixes it in place and gets ready to start the next one, while Return draws it and exits rectangle mode.

Five brushes including an airbrush are available by pressing A. Select the one you want with 1 to 5. Hold down the spacebar and move the cursor to draw. Return exits. Colour 0 can be used as an eraser.

A simple fill is accessed by pressing F. It fills until a non-background colour is found.

Press M to enter Magnify mode. You can now draw in the zoom window in the top right-hand corner of the screen. Use the spacebar to draw. The cursor keys scroll the window. Press Return to exit Magnify mode.

Text is entered by pressing T. Now you can type in at the cursor position. Use Delete as normal. Return fixes the text in position and the whole screen can be cleared by pressing Q and W together.

A useful Undo facility is available. Press S to store screen in memory, then recall it by pressing U to swap between present screen and the stored one. Press K and enter the filename to save the picture, while L loads one.

PROCEDURES	
band	Rubberband mode
circ	Circle mode
dots	Draw dotted circle
ellip	Ellipse mode
ell	Draw dotted ellipse
rect	Rectangle mode
box	Draw rectangle
fill	Fill area
wipe	Clear screen

A powerful facility not seen on Electron art packages is cut and paste. Press P to fix one corner of a rubberbanded box, drag it over the area to be cut then press the spacebar. Drag the box to the new position and press Return followed by spacebar for a normal copy, H for a horizontal flip, V for a vertical flip and R to rotate. Use Z and X to rotate about the bottom left corner, then press Space to confirm.

Note that this routine only copies the pixels from one spot to another, so don't overlap the boxes or the screen will be corrupted. It is also quite slow and you may need to tidy up the object with the Magnify option after a rotation.

A large chunk of memory is used for storing the alternate screen (8k) so the program may be tight on memory if an ADFS is fitted, though there is plenty of memory with a tape system.

Command Key	Summary
Z X * ?	Move cursor
0 – 3	Choose colour
Shift+1-6	Choose speed
B	Rubberband
C	Circle
E	Ellipse
R	Rectangle
A	Airbrush
F	Fill
S	Store screen
U	Swap screens
T	Text
P	Cut+paste
Q+W	Clear screen
K	Save screen
L	Load screen
M	Magnify
Spacebar	Confirm/fix
Return	Exit drawing mode
Cursors	Scroll magnified view

```
T69,X%,Y%
  230REPEATPROCmove:MOVEx%,y%:DRA
Wrx%,ry%:DRAWX%,Y%:FORI%=0TO30:NE
XT
  240UNTILINKEY-99ORINKEY-74:PROC
curs(X%,Y%):GCOL0,col%:MOVEX%,Y%:
DRAWrx%,ry%:PROCcurs(X%,Y%)
  250UNTILINKEY-74:PROCbp:ENDPROC
  260DEFPROCcirc
  270PRINTTAB(0,3)"CIRCLE":REPEAT
rx%=X%:ry%=Y%:PROCdots
  280REPEATPROCdots:PROCmove:PROC
dots:UNTILINKEY-99ORINKEY-74:IFIN
KEY-74ret%=1ELSEret%=0
  290PROCcurs(X%,Y%):PROCdots:GCO
L0,col%:MOVErx%+r%,ry%:FORI%=0TO1
9:DRAWrx%+r%*s%(I%+5)DIV100,ry%+r
%*s%(I%)DIV100:NEXT
  300X%=rx%:Y%=ry%:PROCcurs(X%,Y%
):PROCbp:UNTILret%:ENDPROC
  310DEFPROCdots:r%=SQR((X%-rx%)^
2+(Y%-ry%)^2):GCOL3,3:FORI%=0TO18
STEP2:PLOT69,rx%+r%*s%(I%+5)DIV10
0,ry%+r%*s%(I%)DIV100:NEXT:ENDPRO
C
  320DEFPROCellip
  330PRINTTAB(0,3)"ELLIPSE":REPEA
Trx%=X%:ry%=Y%:PROCell
  340REPEATPROCell:PROCmove:PROCe
ll:UNTILINKEY-99ORINKEY-74:IFINKE
Y-74ret%=1ELSEret%=0
  350PROCcurs(X%,Y%):PROCell:GCOL
0,col%:MOVErx%+r%,ry%:FORI%=0TO19
:DRAWrx%+r%*s%(I%+5)DIV100,ry%+s%
*s%(I%)DIV100:NEXT
  360X%=rx%:Y%=ry%:PROCcurs(X%,Y%
):PROCbp:UNTILret%:ENDPROC
  370DEFPROCell:r%=ABS(X%-rx%):s%
=ABS(Y%-ry%):GCOL3,3:FORI%=0TO18S
TEP2:PLOT69,rx%+r%*s%(I%+5)DIV100
,ry%+s%*s%(I%)DIV100:NEXT:ENDPROC
  380DEFPROCrect
  390PRINTTAB(0,3)"RECTANGLE":REP
EATrx%=X%:ry%=Y%:GCOL3,3:PROCbox
  400REPEATPROCbox:PROCmove:PROCb
ox
  410UNTILINKEY-99ORINKEY-74:IFIN
KEY-74ret%=1ELSEret%=0
  420PROCcurs(X%,Y%):GCOL0,col%:P
ROCbox:PROCcurs(X%,Y%):PROCbp:UNT
ILret%:ENDPROC
  430DEFPROCbox:MOVErx%,ry%:DRAWX
%,ry%:DRAWX%,Y%:DRAWrx%,Y%:DRAWrx
%,ry%:ENDPROC
  440DEFPROCfill
  450PRINTTAB(0,3)"FILL":PROCcurs
(X%,Y%):Z%=POINT(X%,Y%):GCOL0,col
%:GCOL0,Z%+128
  460PROCflood(X%,Y%,4):PROCflood
(X%,Y%-4,-4):PROCcurs(X%,Y%):GCOL
0,128:PROCbp:ENDPROC
  470DEFPROCflood(A%,B%,D%)
  480IFPOINT(A%,B%)<>Z%ENDPROC
  490REPEATPLOT77,A%,B%:B%=B%+D%:
UNTILPOINT(A%,B%)<>Z%:PROCflood((
!&314*8+!&310)DIV2AND&FFFF,B%,D%)
:ENDPROC
  500DEFPROCwipe:IFINKEY-34ANDINK
EY-17CLG:PROCbp:PROCcurs(X%,Y%)
  510ENDPROC
  520DEFPROCzoom
  530PRINTTAB(0,3)"ZOOM":PROCcurs
(X%,Y%):VDU26:GCOL0,3:MOVE752,102
3:DRAW752,847:MOVE1136,1023:DRAW1
136,847
  540PROCpixel:A%=5:B%=5:PROCcro:
REPEATK%=GET:PROCcro:*FX15
  550IFK%=90ANDA%>0A%=A%-1ELSEIFK
%=88ANDA%<10A%=A%+1ELSEIFK%=58AND
B%<10B%=B%+1ELSEIFK%=47ANDB%>0B%=
B%-1
  560IFK%>47ANDK%<52col%=K%-48:PR
INTTAB(4,0);col%ELSEIFK%=32GCOL0,
col%:MOVE768+A%*32,863+B%*16:VDU5
,224,4:PLOT69,rx%+A%*8,ry%+B%*4
  570IFK%=136X%=X%-24ELSEIFK%=137
X%=X%+24ELSEIFK%=138Y%=Y%-12ELSEI
FK%=139Y%=Y%+12
  580IFK%>135ANDK%<140PROCpixel:A
%=5:B%=5
  590PROCcro:UNTILINKEY-74:VDU24,
752;847;1136;1023;16,24,0;0;1279;
831;:PROCcurs(X%,Y%):PROCbp:ENDPR
OC
  600DEFPROCpixel:rx%=X%-40:ry%=Y
%-20:IFrx%<0rx%=0ELSEIFrx%>1192rx
%=1192
  610IFry%>791ry%=791ELSEIFry%<0r
y%=0
  620VDU5:FORI%=0TO10:FORJ%=0TO10
:GCOL0,POINT(rx%+I%*8,ry%+J%*4):M
OVE768+I%*32,863+J%*16:VDU224:NEX
T,:ENDPROC
  630DEFPROCcro:GCOL3,3:MOVE768+3
2*A%,863+16*B%:VDU5,226,4:ENDPROC
  640DEFPROCcut
  650PRINTTAB(0,3)"CUT+PASTE":rx%
=X%:ry%=Y%:PROCbox
  660REPEATPROCbox:PROCmove:PROCb
ox:UNTILINKEY-99:PROCcurs(X%,Y%):
IFX%<rx%a%=X%:X%=rx%:rx%=a%
  670IFY%<ry%a%=Y%:Y%=ry%:ry%=a%
  680C%=rx%:D%=ry%:E%=X%-rx%:F%=Y
%-ry%:PROCcurs(X%,Y%):REPEATPROCb
ox:PROCmove:rx%=X%-E%:ry%=Y%-F%:P
ROCbox:UNTILINKEY-74:PROCbox
  690PROCcurs(X%,Y%):REPEATA%=GET
:UNTILA%=32ORA%=72ORA%=86ORA%=82:
step%=8
  700IFA%=82PROCrotate:cos=COSRAD
an%:sin=SINRADan%:step%=4:IF(an%>
40ANDan%<140)OR(an%>220ANDan%<320
)sin=sin*2
  710FORI%=0TOEXSTEPstep%:FORJ%=0
TOFXSTEPstep%DIV2:GCOL0,POINT(C%+
I%,D%+J%)
  720IFA%=32PLOT69,rx%+I%,ry%+J%E
LSEIFA%=72PLOT69,rx%+E%-I%,ry%+J%
ELSEIFA%=86PLOT69,rx%+I%,ry%+F%-J
%ELSEPLOT69,rx%+I%*cos-J%*sin,ry%
```

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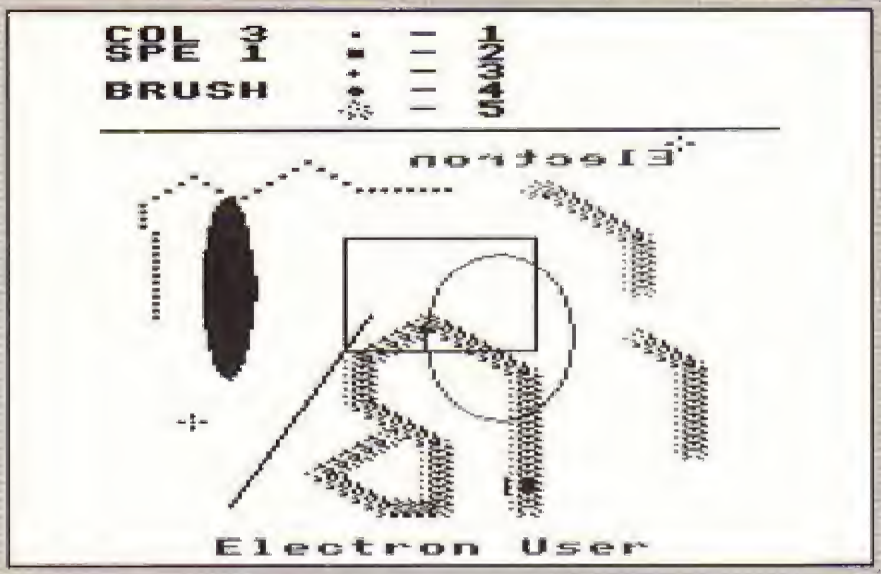
```
+sin*1%61V4+J%*cos
  730NEXT,:PROCcurs(XX,YX):PROCbp
:ENDPROC
  740DEFPROCrotate:anX=0:PROCline
  750REPEATI%=anX+10*(INKEY-67-IN
KEY-98):IFI%<0I%=350ELSEIFI%>350I
%=0
  760IFI%<>anX%PROCline:anX%=I%:PRO
Cline
  770UNTILINKEY-99:PROCline:ENDPR
OC
  780DEFPROCline:MOVErxX+60*COSRA
Dan%,ryX+60*SINRADan%:DRAWrx%,ry%
:DRAWrxX+10*COSRAD(anX+90),ryX+10
*SINRAD(anX+90):ENDPROC
  790DEFPROCbrush
  800FORI%=0TO4:PRINTTAB(7,I%)CHR
$(227+I%)" - ";I%+1:NEXT:PRINTTAB
(0,3)"BRUSH":REPEATI%=GET-49:UNTI
LI%>=0ANDI%<5
  810REPEATPROCmove:IFINKEY-99PRO
Ccurs(X%,Y%):GCOL0,col%:MOVEX%-24
,Y%+12:VDU5,227+I%,4:PROCcurs(X%,
Y%)
  820UNTILINKEY-74:FORI%=0TO4:PRI
NTTAB(7,I%)SPC8:NEXT:PROCbp:ENDPR
OC
  830DEFPROCtext
  840PRINTTAB(0,3)"TEXT":A$="":rx
%=X%-24:ryX=Y%+12
  850REPEATREPEATI%=GET:UNTILI%>3
1ANDI%<128ORI%=13:PROCcurs(XX,YX)
:MOVErx%,ry%:VDU5:PRINTA$
  860IFI%>31ANDI%<127ANDX%<1216A$
=A$+CHR$I%:XX=XX+64ELSEIFI%=127AN
DA$<>""A$=LEFT$(A$,LEN(A$)-1):X%=
XX-64
  870MOVErx%,ry%:PRINTA$:PROCcurs
(X%,YX):UNTILI%=13
  880GCOL0,col%:MOVErx%,ry%:VDU5:
PRINTA$:VDU4:PROCbp:ENDPROC
  890DEFPROCfile(I%)
  900VDU28,0,4,19,0,12:INPUT'"F11
ename ?"'A$:IFA$<>""PROCf2(I%)
  910CLS:PRINT"COL ";col%'"SPE ";
sp%/8:PROCbp:ENDPROC
  920DEFPROCf2(I%)
  930PRINY'':IFI%OSCLI"LOAD "+A$+
" 5F80"ELSEOSCLI"SAVE "+A$+" 5F80
 8000"
  940ENDPROC
  950DEFPROCscr(C%)PROCcurs(X%,Y%
):!&70=&5F80:!&72=&3:A%=C%:CALL&
:PROCcurs(X%,Y%):PROCbp:ENDPROC
  960DEFPROCinit:*FX229,1
  970DIMS%8320,s%(24):FORI%=1T025
:s%(I%-1)=100*SINRAD(I%*18):NEXT:
*FX4,1
  980VDU23,224,240,240,240,240,0;
0;23,225,16,16,0,198,0,16,16,0,23
,226,0,96,96,0;0;0;23,227;0;24,24
;0;0;
  990VDU23,228,0,0,60,60,60,60,0;
23,229,0,0,0,16,56,16;0;23,230,0,
0,24,60,60,24,0;23,231,16,8,34,8,
130,33,20,34
 1000X%=0:Y%=0:sp%=8:col%=3:FORI%
=0TO2STEP2:P%=&900:[OPTI%
 1010.&XTAX:LDY#0:.s1:LDA(&70),Y:
CPX#0:BNEsw:STA(&72),Y:SEC:BCSs2:
.sw:PHA:LDA(&72),Y:STA(&70),Y:PLA
:STA(&72),Y
 1020.s2:INC&70:BNEs3:INC&71:.s3:
INC&72:BNEs4:INC&73:.s4:LDA&71:CM
P#&80:BNEs1:RTS:]NEXT:ENDPROC
>*SPOOL
```



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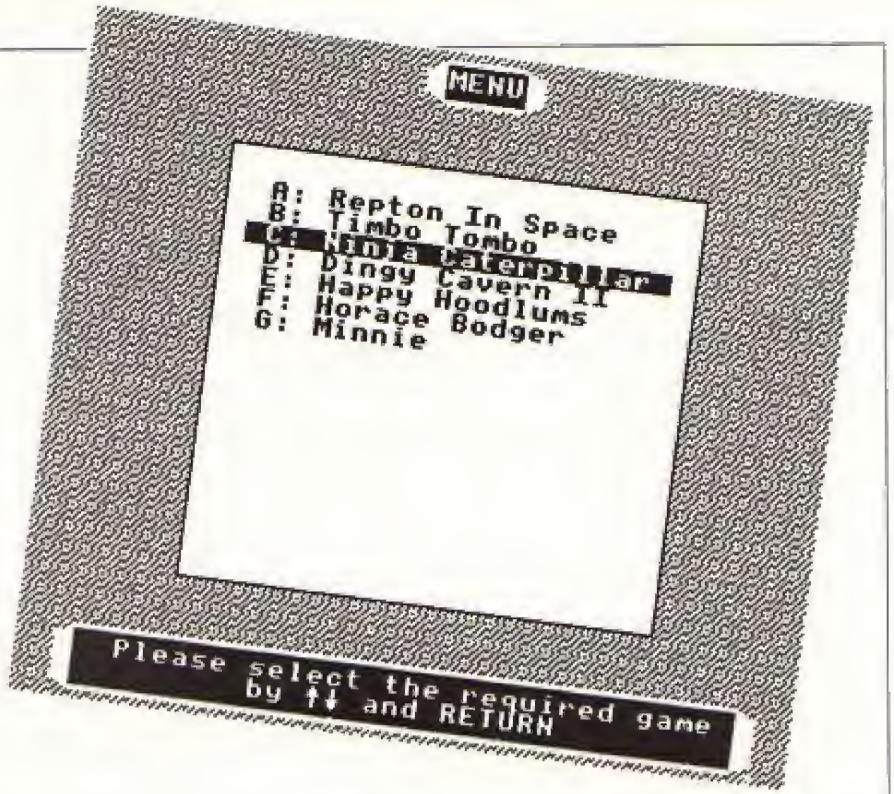
TO ORDER PLEASE USE THE FORM ON PAGE 45

Should you fancy a tasty dish...



DISC MENU is a user friendly menu system designed to make the process of loading and running disc files as easy as possible. The utility is written in Basic, but you can load Basic, machine code or even *EXEC Ascii text files.

To set up the menu, enter the Basic listing below. The data statements at the end will need to be altered slightly for each disc you intend putting the menu on. Line 2020 holds the number of items on the menu, and the following lines hold the information for each file.

The first item is the index letter on the menu, the second is the text which is printed on the menu screen and the third is the method of loading, for instance, CHAIN or *RUN. The fourth item is the filename and the full pathname of the file is required with *EXEC and *RUN.

Steve Wyeth has cooked up this very attractive disc menu program

The last item specifies the screen mode to change to when the program is loaded – for instance, some games require Mode 6. If a mode change is required M followed by the mode number is used, like M6 for Mode 6.

Save the menu program onto your disc and then enter:

```
*OPT4,3
*BUILD !BOOT
CHAIN "MENU"
```

Press Escape after the last line. Now you can press Shift+Break to run the menu. The cursor up and down keys move the highlight up and down the list of files.

The letter keys A to Z move the highlight immediately to the specified item if such a letter is on the menu. The Return key selects the currently highlighted program then loads and runs it.

```
   10 REM Disc  Menu
   20 REM By Steve Wyeth
   25 REM (c) Electron User
   30 MODE 4
   40 *FX 4,1
   50 REM *FX 229,1
   60 PROC_variable_definitions
   70 PROC_fill_arrays
   80 PROC_print_screen
   90 PROC_print_menu_items
  100 REPEAT
  110 PROC_print_current_option
  120 PROC_accept_input_from_user
  130 IF flag = FALSE THEN PROC_d
elete_current_option
  140 UNTIL flag = TRUE
  150 *FX 4,0
  160 PROC_load_game
  170 END
  180 :
  190 DEF PROC_variable_definitio
ns
  200 blue          = 4
  210 white         = 7
  220 background    = 0
  230 foreground    = 1
  240 current_entry = 1
  250 READ menu_entries
  260 DIM position$(menu_entries)
  270 DIM entry$(menu_entries)
  280 DIM loading$(menu_entries)
  290 DIM filename$(menu_entries)
  300 DIM note$(menu_entries)
  310 pos           = 0
  320 old_entry     = 1
  330 flag          = FALSE
  340 entry_flag    = FALSE
  350 User_Input$ = ""
  360 ENDPROC
  370 :
  380 DEF PROC_fill_arrays
  390 FOR loop% = 1 TO menu_entri
es
  400 READ position$(loop%)
  410 READ entry$(loop%)
  420 READ loading$(loop%)
  430 READ filename$(loop%)
  440 READ note$(loop%)
  450 NEXT loop%
  460 ENDPROC
  470 :
  480 DEF PROC_print_screen
  490 VDU 19,background,blue;0;
  500 VDU 19,foreground,white;0;
  510 PROC_character_definitions
  520 VDU 23;8202;0;0;0;
  530 PROC_print_background
  540 PROC_pretty_border(584,1008
,4)
  550 MOVE 584,992
  560 PRINT "MENU"
  570 VDU 4
  580 COLOUR 129
  590 COLOUR 0
  600 PROC_rectangle(250,200,782,
650)
  610 PROC_pretty_border(96,108,3
4)
  620 PROC_pretty_border(96,76,34
)
  630 PRINTTAB(3,29);"  Please se
lect the required game "
  640 PRINT TAB(5,30);SPC(7);"by
";CHR$130;CHR$131;" and RETURN"
  650 GCOL 0,1
  660 PLOT 69,1184,72
  670 PLOT 69,1184,76
  680 ENDPROC
  690 :
  700 DEF PROC_character_definiti
ons
  710 REM Up Arrow
  720 VDU 23,130,24,60,60,126,24,
24,24,24
  730 REM Down Arrow
  740 VDU 23,131,24,24,24,24,126,
60,60,24
  750 REM Background Character
  760 VDU 23,132,146,36,73,146,36
,73,146,36
  770 ENDPROC
  780 :
  790 DEF PROC_print_background
  800 FOR loop%=0 TO 31
  810 PRINT TAB(0,loop%);STRING$(
40,CHR$132);
  820 NEXT loop%
  830 VDU 5
  840 MOVE 0,28
  850 PRINT STRING$(40,CHR$132)
```

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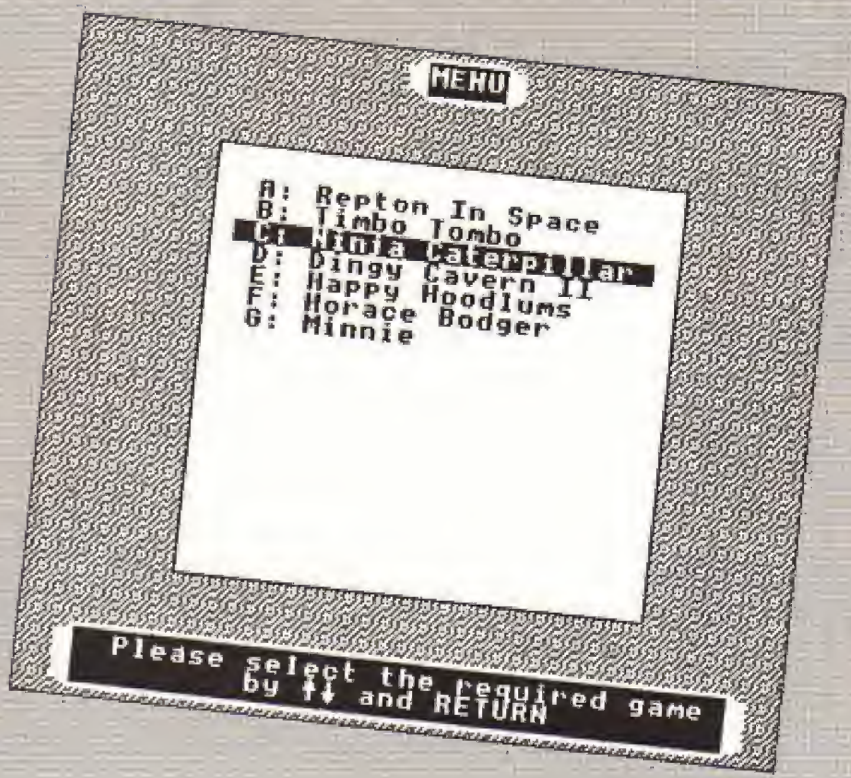
```
  860 ENDPROC
  870 :
  880 DEF PROC_pretty_border(X_Co
_ord%,Y_Co_ord%,String_Length%)
  890 GCOL 0,0
  900 Y_Adjustment%=Y_Co_ord%-64

  910 X_Adjustment%=X_Co_ord%+Str
ing_Length%*32
  920 MOVE X_Co_ord%,Y_Co_ord%
  930 MOVE X_Co_ord%,Y_Co_ord%-16

  940 PLOT 85,X_Co_ord%-32,Y_Co_o
rd%-16
  950 PLOT 85,X_Co_ord%-32,Y_Co_o
rd%-48
  960 MOVE X_Co_ord%,Y_Co_ord%-48

  970 PLOT 85,X_Co_ord%,Y_Co_ord%
-16
  980 MOVE X_Co_ord%,Y_Co_ord%-48

  990 MOVE X_Co_ord%-32,Y_Co_ord%
-48
 1000 PLOT 85,X_Co_ord%,Y_Co_ord%
-64
 1010 MOVE X_Adjustment%,Y_Co_ord
%
 1020 MOVE X_Adjustment%,Y_Co_ord
%-16
 1030 PLOT 85,X_Adjustment%+32,Y_
Co_ord%-16
 1040 PLOT 85,X_Adjustment%+32,Y_
Co_ord%-48
 1050 MOVE X_Adjustment%,Y_Co_ord
%-48
 1060 PLOT 85,X_Adjustment%,Y_Co_
ord%-16
 1070 MOVE X_Adjustment%,Y_Co_ord
%-48
 1080 MOVE X_Adjustment%+32,Y_Co_
ord%-48
 1090 PLOT 85,X_Adjustment%,Y_Co_
ord%-64
 1100 MOVE X_Co_ord%,Y_Co_ord%
 1110 MOVE X_Co_ord%,Y_Adjustment
%
 1120 PLOT 85,X_Adjustment%,Y_Co_
ord%
 1130 PLOT 85,X_Adjustment%,Y_Adj
ustment%
 1140 GCOL 0,1
 1150 MOVE X_Co_ord%,Y_Co_ord%-8
 1160 MOVE X_Co_ord%,Y_Adjustment
%+8
 1170 PLOT 85,X_Adjustment%,Y_Co_
ord%-8
 1180 PLOT 85,X_Adjustment%,Y_Adj
ustment%+8
 1190 GCOL 0,0
 1200 ENDPROC
 1210 :
 1220 DEF PROC_rectangle(X_Co_ord
%,Y_Co_ord%,Width%,Height%)
 1230 VDU 24,X_Co_ord%;Y_Co_ord%;
X_Co_ord%+Width%;Y_Co_ord%+Height
%;
 1240 CLG
 1250 VDU 26
 1260 GCOL 0,1
 1270 MOVE X_Co_ord%,Y_Co_ord%
 1280 DRAW X_Co_ord%,Y_Co_ord%+He
ight%
 1290 DRAW X_Co_ord%+Width%,Y_Co_
ord%+Height%
 1300 DRAW X_Co_ord%+Width%,Y_Co_
ord%
 1310 DRAW X_Co_ord%,Y_Co_ord%
 1320 ENDPROC
 1330 :
 1340 DEF PROC_print_menu_items
 1350 COLOUR 1
 1360 COLOUR 128
 1370 FOR loop% = 1 TO menu_entri
es
 1380 PRINT TAB(10,loop%+6);posit
ion$(loop%);": ";entry$(loop%)
 1390 NEXT loop%
 1400 ENDPROC
 1410 :
 1420 DEF PROC_print_current_opti
on
 1430 COLOUR 0
 1440 COLOUR 129
 1450 PRINT TAB(9,current_entry+6
);" ";position$(current_entry);":
 ";entry$(current_entry);
 1460 pos = POS
 1470 FOR loop% = pos TO 30
 1480 PRINT " ";
 1490 NEXT
 1500 ENDPROC
 1510 :
 1520 DEF PROC_accept_input_from_
user
 1530 *FX 15
 1540 entry_flag  = FALSE
 1550 User_Input$ = ""
 1560 REPEAT
 1570 User_Input$=INKEY$(20)
 1580 PROC_validate_input
 1590 UNTIL entry_flag = TRUE
 1600 old_entry = current_entry
 1610 IF User_Input$ = CHR$138 TH
EN current_entry = current_entry
+1
 1620 IF User_Input$ = CHR$139 TH
EN current_entry = current_entry
-1
 1630 IF User_Input$ = CHR$13 THE
N flag = TRUE
 1640 IF (ASC(User_Input$)-64)>0
AND (ASC(User_Input$)-64)<=menu_e
ntries THEN current_entry = (ASC(
User_Input$)-64)
 1650 IF User_Input$ = CHR$138 AN
D (current_entry > menu_entries)
THEN current_entry = 1
 1660 IF User_Input$ = CHR$139 AN
D (current_entry < 1) THEN curren
t_entry = menu_entries
 1670 ENDPROC
 1680 :
 1690 DEF PROC_validate_input
 1700 IF User_Input$=CHR$139 OR U
ser_Input$=CHR$138 OR User_Input$
=CHR$13 THEN entry_flag=TRUE
 1710 IF (ASC(User_Input$)-64)>0
AND (ASC(User_Input$)-64)<=menu_e
ntries THEN entry_flag = TRUE
 1720 ENDPROC
 1730 :
 1740 DEF PROC_delete_current_opt
ion
 1750 COLOUR 1
 1760 COLOUR 128
 1770 PRINT TAB(9,old_entry+6);"
";position$(old_entry);": ";entry
$(old_entry);
 1780 pos = POS
 1790 FOR loop% = pos TO 30
 1800 PRINT " ";
 1810 NEXT
 1820 ENDPROC
 1830 :
 1840 DEF PROC_load_game
 1850 PROC_check_notes
 1860 IF loading$(current_entry)
= "CHAIN" THEN CHAIN filename$(cu
rrent_entry)
 1870 IF loading$(current_entry)
= "*EXEC" THEN OSCLI("EXEC" + fil
ename$(current_entry))
 1880 IF loading$(current_entry)
= "*RUN" THEN OSCLI("RUN" + filen
ame$(current_entry))
 1890 ENDPROC
 1900 :
 1910 DEF PROC_check_notes
 1920 IF INSTR(note$(current_entr
y),"M") = 1 THEN VDU 22,VAL(MID$(
note$(current_entry),2,1))
 1930 ENDPROC
 1940 :
 1950 REM ***************
 1960 REM ** Data Area **
 1970 REM ***************
 1980 REM :
 1990 REM OSCLI (e.g. *RUN) calls
need
 2000 REM full pathname including
drive
 2010 REM :
 2020 DATA 7
 2030 DATA A,Repton In Space,CHAI
N,REPTILE,XX
 2040 DATA B,Timbo Tombo,*EXEC,:2
.!BOOT,XX
 2050 DATA C,Ninja Caterpillar,*R
UN,:0.NINJ,XX
 2060 DATA D,Dingy Cavern II,CHAI
N,DINGY,M6
 2070 DATA E,Happy Hoodlums,*EXEC
,:2.HELLO,M6
 2080 DATA F,Horace Bodger,CHAIN,
HORACE,XX
 2090 DATA G,Minnie,CHAIN,Min,XX
```



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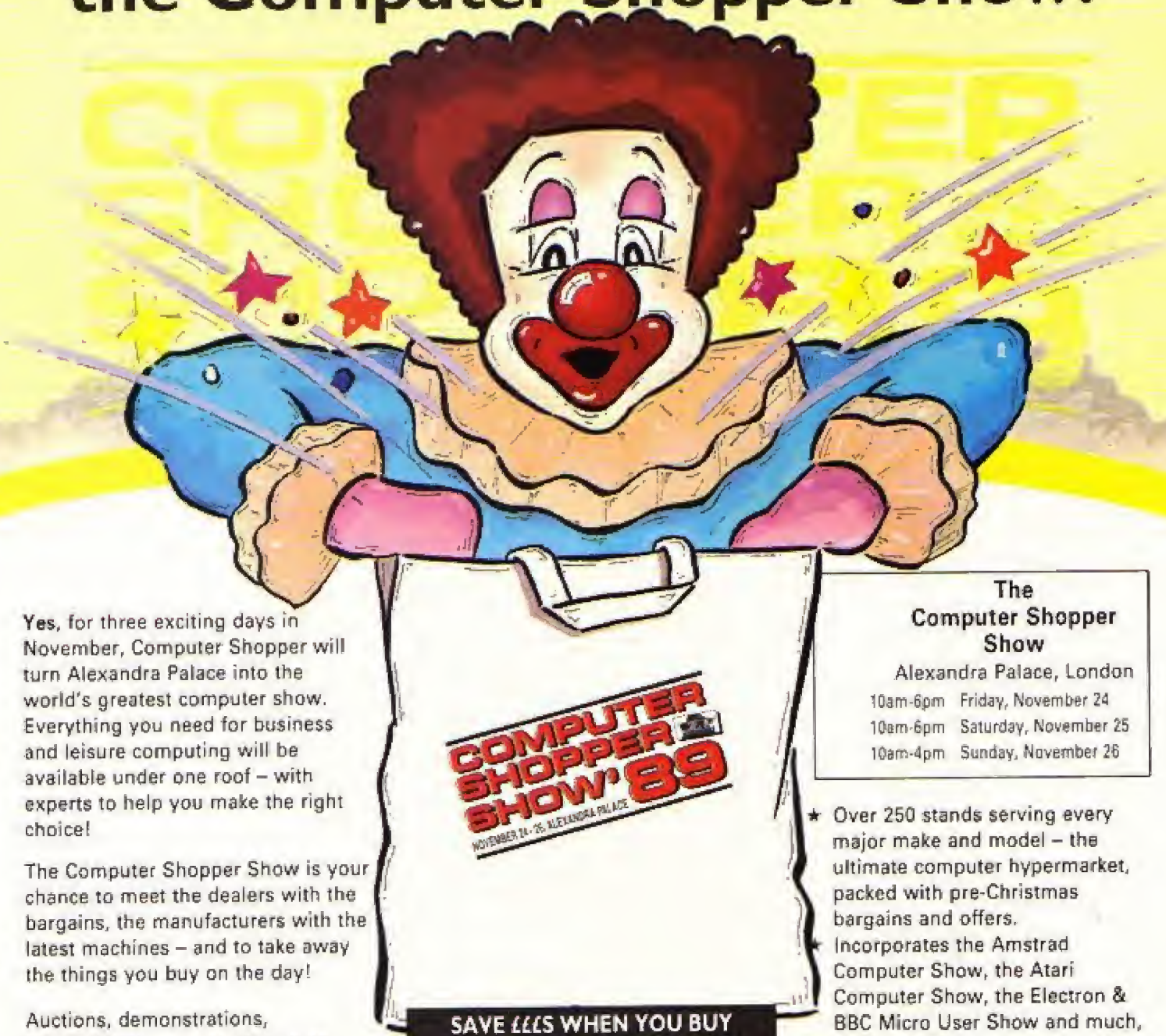

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ESCAPE FROM

LETTERS have been flooding in requesting help with that highly entertaining but difficult Superior Software game, Exile. Escaping from the central cavern and collecting the weapon seem to be causing a few problems.

Thanks to Leo McCann of Streatham, London, we can now help all those readers who've been scratching their heads in front of their Electron over the last few months. Before entering the cave complex go to the spaceship's undercarriage on the surface after getting the grenade from the bush on the right. There should be a series of red and yellow hatches above you.

Hold down the full boost thrust key and you will hit the cannon above, making it fly into the air. Keep the thrust keys pressed and when the cannon lands on your head move to the left. You should now have entered the spaceship.

Collect the grenade and shift the cannon to your left. Leave through the hatch. Fly over the top of the ship to a cabin with a horizontal door. Drop a grenade on the right-hand edge at the end of the door and move well away from the blast. Both the grenades inside the cabin should be intact, so pick them up and blast the door into the cavern.

Go up the diagonal tunnel and descend the vertical one. Enter the tunnel on your left and grab a grenade which is placed high up on the wall. Beware of the wasps. It is best to remember the location outside the wasp room and teleport out once you have the grenade safely in your pocket.

Enter the central cavern, where you will find a little cabin with a robot, a gun and a teleporter. Drop a grenade on the ledge below the door, but be careful as there is a bird here.

The robot will now be after you. Try to get into the cabin and collect the gun (if it hasn't been moved). Turn on the teleporter and lure the robot into it, which is easier said than done. Leave the teleporter on. Shoot the bird about 15 times and it will turn into a fireball.

To get out of the cavern go down to a bush with a pack of annoying monkeys. You will find a blue and yellow hatch to the left. Go through it, move to your left and up into a room which holds a wasp's nest and an oversized urn.

Fly in and take the urn. It is too big to be stuffed into your pocket, so you can't teleport with it. The next task is difficult and frustrating. Walk forward towards the door until you are in front of the nest. The wasps come out when the door closes.

Jump up and throw the urn out of the door, then teleport out. Collect the urn and go out of the hatch and leave it on the ground to the west of the hatch. Now you must collect a key.

Switch off the teleporter in the robot's cabin. Press R inside the cabin and fly out so that the robot follows you. Press T, switch on the teleporter, and get in it.

Quickly fly up to a hole in the ceiling, avoiding the flock of birds. Press R and slowly fly out. Hold down the downthrust and pickup buttons and collect the key. Press T and go back to the central cavern.

There is another grenade to collect here. Go to the large east wall of the cavern, fly down and take the grenade that is stuck in the floor by the gun. Return to collect your urn.

Travel west and drop it in the water to fill it up. Any sudden movement will upset it, calling for a refill. Go west to a hatch above a fire. Enter the room, leaving the urn in the middle of the door. Go to the monkey bush and fly over the hatch into a small chamber.

You will hear a door open. Lure a monkey into this chamber by shooting one. Teleport back to the door with urn and the door will open so you can get the RCD. Store it and retrieve your urn; leave it in a safe place.

Now go to the entrance to the cave complex. Kill the funny round creatures, which only need to be shot once. Hold the RCD and aim it at the door next to their nest. Use it, then store it.

Throw a grenade inside the door and close it. The robot should blow up or be blown back into the cave. Fly through the cave into an alcove containing a bed, avoiding the other robot's fire. Lie on the bed, then aim your gun down and shoot so it moves. Under the bed is a secret manhole by the wall. Climb down it. Now you will be in a circular room.

Fly up and aim your gun at a button on the wall. Shoot it. A robot will probably appear with more round creatures. Shoot them and get the robot to go into the west teleporter.

Aim your fire at an icon you can see on a ledge between the teleporters. Keep shooting it so it gets blown back into the teleporter. Go around and follow it in by using that teleporter. Get the icon.

That should be enough information to get you well into the game. Have fun!

Going for a spin

Try this addictive but frustrating bat 'n' ball game by the inventive Nicholas Jameson

SPINNING Frustration is a variation on the old arcade game Breakout. In this clone of the classic the object is to knock out all the blocks of fungus at the top of the screen with a spinning ball which bounces around at high speed.

The ball is trapped and can't get away, but if it hits the wall at the bottom of the screen directly after hitting a block the fungus grows and you lose some of the bonus points available.

You can prevent this from happening by hitting the ball back up the screen with the bat, which you can move left and right at the bottom of the screen.

You score points for knocking out fungus blocks and a bonus is available. However, the game will be over if your bonus falls to zero. Also if the fungus gets down to the same level as your bat you lose.

Part of the game is written in machine code for extra speed and smooth animation so take care when entering the listing. The interrupt-driven music which accompanies the game can be turned off by pressing Q.

```
   10 REM Spinning Frustration
   20 REM By Nicholas Jameson
   30 REM (c) Electron User
   40 REM
   50 *FX200,1
   60 MODE4:VDU23,1,0;0;0;0;
   70 PROCtitle
   80 PROCscores
   90 PROCassemble
  100 CLS:VDU19,1,7;0;
  110 REPEAT
  120 PROCinstruct
  130 MODE5:VDU23,1,0;0;0;0;
  140 PROCgame
  150 MODE4:VDU23,1,0;0;0;0;
  160 PROCreport
  170 IFI%=0 GOTO130
  180 UNTILO
  190 REM  High scores
  200 DATA Fred,Jim,Sheila,User,E
lectron,Nick,Tim,Mick,Andy,Bruno
  210 REM  Graphics data
  220 DATA1,3,112,112,112,3,1,0,8
,12,224,224,224,12,8,0
  230 DATA1,33,112,52,22,3,1,0,8,
12,14,134,194,192,8,0
  240 DATA16,18,22,22,22,18,16,0,
128,132,134,134,134,132,128,0
  250 DATA1,3,22,52,112,33,1,0,8,
192,194,134,14,12,8,0
  260 DATA7,225,225,225,225,225,2
24,0
  270 REM  Data for tune
  280 DATA80,76,72,68,255,80,255,
100,255,116,255,116,108,108,104,1
08,108,100,96,100,100,96,92,96,96
,88,84,88,80,76,72,68,80,255,100,
255,68,64,60,60,255,80,255,96,255
,96,88,84,88,80,76,72,68,255,52,2
55,32,255,52,68
  290 DATA80,76,68,60,255,48,255,
32,255,48,60,99
  300 DEFPROCassemble
  310 FORbyte=0TO71
  320 READdata
  330 byte?&C00=data
  340 NEXT
  350 byte=0
  360 REPEAT
  370 READdata
  380 IFdata=99 GOTO420
  390 byte?&4900=data
  400 byte=byte+1
  410 UNTILO
  420 FORpass=0TO2STEP2
  430 P%=&5000
  440 [OPTpass
  450 .init \initialisation and s
ummary
  460 LDA#&50:STA&70 \ball positi
on
  470 LDA#&71:STA&71
  480 LDA#0:STA&72 \balls old pos
ition
  490 LDA#&80:STA&73
  500 \ &74 and &75 - reserved fo
r checking
  510 LDA#&88:STA&76 \batters pos
ition
  520 LDA#&7B:STA&77
  530 LDA#0:STA&78 \batters old p
osition
  540 LDA#&80:STA&79
  550 LDA#0:STA&7C \location for
data for ball
```

CONTROLS	
Z	Left
X	Right
Return	Freeze game
*	Unfreeze game
?	Abort game
Q	Sound off
S	Sound on

```
  560 LDA#&C:STA&7D
  570 LDA#2:STA&C4A \direction of
 ball
  580 LDA#0:STA&7A \pointer for I
RQ driven music
  590 LDA#&49:STA&7B
  600 LDA#16:STA&C4B \counter for
 IRQ driven music
  610 LDA#1:STA&C48:STA&C49 \posi
tion of ball and counter for spin
ning rate
  620 LDX#8:LDY#0:LDA#214:JSR&FFF
4
  630 LDA#1:STA&C52
  640 LDA#&86:STA&8E \counter for
 blocks left
  650 LDA#1:STA&8F
  660 LDA#0:STA&C4C \score
  670 LDA#0:STA&C4D
  680 LDA#&88:STA&C53 \bonus
  690 LDA#&13:STA&C54
  700 LDA#0:STA&C4E \dead yet?
  710 LDX#service AND &FF
  720 LDY#service DIV &100
  730 SEI
  740 STX&204
  750 STY&205
  760 CLI
  770 LDA#&A0:STA&7E
  780 LDA#&5F:STA&7F
  790 .blockloop1
  800 LDX#&F0
  810 .blockloop2
  820 TXA:CLC:ADC&7E:STA&80
  830 LDA&7F:ADC#0:STA&81
  840 LDY#7
  850 .blockloop3
  860 LDA&C40,Y:STA(&80),Y
  870 DEY:BPLblockloop3
  880 TXA:SEC:SBC#8:TAX:BNEblockl
oop2
  890 LDA&7F:CMP#&6E:BEQendsub
  900 LDA&7E:CLC:ADC#&40:STA&7E
  910 LDA&7F:ADC#1:STA&7F
  920 JMPblockloop1
  930 .endsub
  940 LDA#&A0:STA&7E \location fo
r fungus to grow
  950 LDA#&6C:STA&7F
  960 JMPml
  970 .service
  980 TYA
  990 PHA
 1000 TXA
 1010 PHA
 1020 LDA&C52:BEQoldvector
 1030 INC&C4B:LDA&C4B:CMP#19:BNEo
ldvector
 1040 LDA#0:STA&C4B
 1050 .sound
 1060 LDA#0:STA&C4B
 1070 LDY#0:LDA(&7A),Y
 1080 LDA(&7A),Y:TAX:LDA#213:JSR&
FFF4
 1090 LDA#21:LDX#5:JSR&FFF4
 1100 LDA#7:JSR&FFEE
 1110 LDA&7A:CLC:ADC#1:STA&7A:CMP
#71:BNEgap
 1120 LDA#0:STA&7A
 1130 .gap
 1140 LDA(&7A),Y:CMP#255:BNEoldve
ctor
 1150 LDA#236:STA&C4B
 1160 LDA&7A:CLC:ADC#1:STA&7A
 1170 .oldvector
 1180 PLA
 1190 TAX
 1200 PLA
 1210 TAY
 1220 JMP&DB47
 1230 .ml
 1240 JSRdirection
 1250 LDA&C4C:STA&C4F
 1260 JSRprint
 1270 JSRbatter
 1280 LDA#&81:LDX#&EF:LDY#&FF:JSR
&FFF4:TYA:BEQon
 1290 LDA#0:STA&C52
 1300 .on
 1310 LDA#&81:LDX#&AE:LDY#&FF:JSR
&FFF4:TYA:BEQabort
 1320 LDA#1:STA&C52
 1330 .abort
 1340 LDA#&81:LDX#&97:LDY#&FF:JSR
&FFF4:TYA:BEQhold
 1350 LDA#2:STA&C4E:JMPdead
 1360 .hold
 1370 LDA#&81:LDX#&B6:LDY#&FF:JSR
&FFF4:TYA:BEQnofreeze
 1380 LDA&C52:STA&C50
 1390 LDA#0:STA&C52
 1400 .freeze
 1410 LDA#&81:LDX#&B7:LDY#&FF:JSR
&FFF4:TYA:BEQfreeze
 1420 LDA&C50:STA&C52
 1430 .nofreeze
 1440 JSRpause
 1450 LDA&C4E:BNEdead
 1460 LDA&8F:BNEml
 1470 LDA&8E:BNEml
 1480 .dead
 1490 RTS
 1500 .pause
 1510 LDY#15
 1520 LDX#0
 1530 .ploop
 1540 DEX:BNEploop
 1550 DEY:BNEploop
 1560 RTS
 1570 .direction
 1580 LDA&C57:BEQcheckpos1
 1590 LDA&71:CMP#&7B:BNEcheckpos:
JSRfungii
 1600 LDA&C4E:BEQcheckpos
 1610 RTS
 1620 .checkpos LDA&71:CMP#&7C:BN
Echeckpos1:JSRfungii
 1630 LDA&C4E:BEQcheckpos1
 1640 RTS
 1650 .checkpos1
 1660 LDA&70:SEC:SBC#&40:STA&74
 1670 LDA&71:SBC#1:STA&75
 1680 LDY#0
 1690 LDA(&74),Y:BEQunderneath
 1700 CMP#7:BNEcarr
 1710 JSRblank
 1720 .carr
 1730 LDA&C4A:CMP#1:BNEother
 1740 LDA#4:STA&C4A
 1750 .other
 1760 LDA&C4A:CMP#2:BNEunderneath
 1770 LDA#3:STA&C4A
 1780 .underneath
 1790 LDA&70:CLC:ADC#&40:STA&74
 1800 LDA&71:ADC#1:STA&75
 1810 LDA(&74),Y:BEQlefthand
 1820 CMP#7:BNEcarr1
 1830 JSRblank
 1840 .carr1
 1850 LDA&C4A:CMP#4:BNEother1
 1860 LDA#1:STA&C4A
 1870 .other1
 1880 LDA&C4A:CMP#3:BNElefthand
 1890 LDA#2:STA&C4A
 1900 .lefthand
 1910 LDA&70:SEC:SBC#8:STA&74
 1920 LDA&71:SBC#0:STA&75
 1930 LDA(&74),Y:BEQrighthand
 1940 CMP#7:BNEcarr2
 1950 JSRblank
 1960 .carr2
 1970 LDA&C4A:CMP#1:BNEother2
 1980 LDA#2:STA&C4A
 1990 .other2
 2000 LDA&C4A:CMP#4:BNErighthand
 2010 LDA#3:STA&C4A
 2020 .righthand
 2030 LDA&70:CLC:ADC#16:STA&74
 2040 LDA&71:ADC#0:STA&75
 2050 LDA(&74),Y:BEQmove
 2060 CMP#7:BNEcarr3
 2070 JSRblank
 2080 .carr3
 2090 LDA&C4A:CMP#2:BNEother3
 2100 LDA#1:STA&C4A
 2110 .other3
 2120 LDA&C4A:CMP#3:BNEmove
 2130 LDA#4:STA&C4A
 2140 .move
 2150 LDA&C4A:CMP#1:BEQupleft
 2160 LDA&C4A:CMP#2:BEQupright
 2170 LDA&C4A:CMP#3:BEQdownright
 2180 LDA&70:CLC:ADC#&38:STA&70
 2190 LDA&71:ADC#1:STA&71
 2200 RTS
 2210 .upleft
 2220 LDA&70:SEC:SBC#&48:STA&70
 2230 LDA&71:SBC#1:STA&71
 2240 RTS
 2250 .upright
 2260 LDA&70:SEC:SBC#&38:STA&70
 2270 LDA&71:SBC#1:STA&71
 2280 RTS
 2290 .downright
 2300 LDA&70:CLC:ADC#&48:STA&70
 2310 LDA&71:ADC#1:STA&71
 2320 RTS
 2330 .print
 2340 LDX#2
 2350 .loop1
 2360 LDY#15
 2370 .loop2
 2380 LDA(&7C),Y:EOR(&72),Y:STA(&
72),Y
 2390 DEY:BPLloop2
 2400 TXA:CMP#2:BNEfido
 2410 JSRspin
 2420 .fido
 2430 LDA&7D:STA&72
 2440 LDA&71:STA&73
 2450 DEX:BNEloop1
 2460 RTS
 2470 .batter
 2480 LDA#&81
 2490 LDX#&9E
 2500 LDY#&FF
 2510 JSR&FFF4
 2520 TYA:BEQright
 2530 LDA&76:SEC:SBC#16:STA&76
 2540 LDA&77:SBC#0:STA&77
 2550 .right
 2560 LDA#&81
 2570 LDX#&BD
 2580 LDY#&FF
 2590 JSR&FFF4
 2600 TYA:BEQchecker
 2610 LDA&76:CLC:ADC#16:STA&76
 2620 LDA&77:ADC#0:STA&77
 2630 .checker
 2640 LDA&76:CMP#&F8:BNEcheck1:LD
A&77:CMP#&7A:BNEcheck1:LDA#8:STA&
76:LDA#&7B:STA&77
 2650 .check1 LDA&76:CMP#8:BNEbat
print:LDA&77:CMP#&7C:BNEbatprint:
LDA#&F8:STA&76:LDA#&7B:STA&77
 2660 .batprint
 2670 LDA#1:STA&C56
 2680 LDX#2
 2690 .loop3
 2700 LDY#63
 2710 .loop4
 2720 LDA&C56:BNEnostripe
 2730 LDA#&A0:EOR(&7B),Y:STA(&78)
,Y
 2740 .nostripe
 2750 INC&C56:LDA&C56:CMP#2:BNEst
ripes
 2760 LDA#0:STA&C56
 2770 .stripes
 2780 DEY:BPLloop4
 2790 LDA&76:STA&78
 2800 LDA&77:STA&79
 2810 DEX:BNEloop3
 2820 RTS
 2830 .blank
 2840 LDA#1:STA&C57
 2850 LDA&BE:SEC:SBC#1:STA&8E
 2860 LDA&8F:SBC#0:STA&8F
 2870 LDY#7:LDA#0
 2880 .bloop
 2890 STA(&74),Y
 2900 DEY:BPLbloop
 2910 LDA&74:STA&7E
 2920 LDA&75:STA&7F
 2930 LDA&C4C:CLC:ADC#3:STA&C4C
 2940 LDA&C4D:ADC#0:STA&C4D
 2950 RTS
 2960 .wscend
 2970 LDA#0:STA&C48
 2980 LDA&7E:SEC:SBC#&80:STA&7E
 2990 LDA&7F:SBC#2:STA&7F
 3000 JMPcountdown
 3010 .fungii
 3020 LDA#0:STA&C57
 3030 LDA&7E:CLC:ADC#&80:STA&7E
 3040 LDA&7F:ADC#2:STA&7F
 3050 CMP#&7B:BNEok
 3060 LDA#3:STA&C4E:RTS
 3070 .ok
```

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electron user MAIL ORDER OFFERS

Here's how you can get the very best out of your Electron

Within the pages of these three books you'll find ALL the information you need to fully harness the power of your Electron. They cover Basic, machine-code programming and the operating system, and between them they also show how to combine all three to create more powerful and effective programs.

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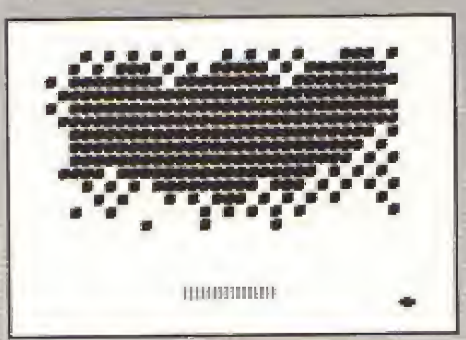
```
3080 LDA&7F:CMP#&7C:BNE0k1
3090 LDA#3:STA&C4E:RTS
3100 .0k1
3110 LDY#0
3120 LDA(&7E),Y:BNEascend
3130 LDA#1:STA&C48
3140 .countdown
3150 LDA&8E:CLC:ADC#1:STA&8E
3160 LDA&8F:ADC#0:STA&8F
3170 LDY#7
3180 .funloop
3190 LDA&C40,Y:STA(&7E),Y
3200 DEY:BPLfunloop
3210 LDA&C54:STA&C51
3220 LDA&C53:SEC:SBC#5D:STA&C53
3230 LDA&C54:SBC#0:STA&C54
3240 LDA&C51:SEC:SBC&C54:BCSgrow
er
3250 LDA#1:STA&C4E
3260 LDA#D:STA&C53:STA&C54
3270 RTS
3280 .grower
3290 LDA&C58:BEQsieze
3300 LDA&7E:SEC:SBC#&40:STA&7E
3310 LDA&7F:SBC#1:STA&7F
3320 .sieze
3330 RTS
3340 .spin
3350 INC&C48:LDA&C48:CMP#14:BEQa
ngle
3360 RTS
3370 .angle LDA#1:STA&C48
3380 INC&C49:LDA&C49:CMP#5:BNEon
e
3390 LDA#1:STA&C49
3400 .one
3410 LDA&C49:CMP#1:BNEtwo
3420 LDA#0:STA&7C:LDA#&C:STA&7D
3430 JMProtend
3440 .two
3450 LDA&C49:CMP#2:BNEthree
3460 LDA#&10:STA&7C:LDA#&C:STA&7
D
3470 JMProtend
3480 .three
3490 LDA&C49:CMP#3:BNEfour
3500 LDA#&20:STA&7C:LDA#&C:STA&7
D
3510 JMProtend
3520 .four
3530 LDA#&30:STA&7C:LDA#&C:STA&7
D
3540 .rotend
3550 RTS
3560 .endtune
3570 LDX#&47
3580 LDY#&DB
3590 SEI
3600 STX&204
3610 STY&205
3620 CLI
3630 RTS
3640 ]
3650 NEXT
3660 ENDPROC
3670 DEFPROCgame
3680 MOVE28,0:DRAW1252,0:DRAW125
2,990:DRAW28,990:DRAW28,0
3690 CALL&5000
3700 IF ?&C4E=1 COLOUR1:PRINTTAB
(3,14);"Bonus is zero-"TAB(6,16);
"Game over":GOTO3750
3710 IF ?&C4E=2 COLOUR1:PRINTTAB
(3,14);"Game aborted"TAB(6,16);"N
o bonus":?&C53=0:?&C54=0:?&8E=0:?
&8F=0:GOTO3750
3720 IF ?&C4E=3 COLOUR1:PRINTTAB
(3,14);"The fungus"TAB(3,16);"has
killed you":?&8E=0:?&8F=0:GOTO37
50
3730 COLOUR2
3740 PRINTTAB(3,14);"Congratulat
ions"
3750 TIME=0:REPEATUNTILTIME=400
3760 CALLendtune
3770 ENDPROC
3780 DEFPROCscores
3790 VDU23,250,24,36,66,126,66,3
6,24,0
3800 DIM S$(10),HI%(10)
3810 FORI%=1TO10
3820 READS$
3830 S$(I%)=S$+" "+CHR$250
3840 HI%(I%)=2000+(I%*200)
3850 NEXT
3860 ENDPROC
3870 DEFPROCinstruct
3880 PRINT''" Spinning Frustrat
ion"
3890 PRINT" ======== ==========
="
3900 PRINT" The idea of this gam
e is to knock out"'" all the fun
gus at the top of the"'" screen
with a spinning ball which"'" bo
unces about the screen. If the b
all"'" hits the bottom directly
after hitting"'
3910 PRINT" a block the fungus g
rows and you loose"'" some bonus
. You have to stop this"'" from
happening by catching the ball"'
" with the bat which you can mov
e left"'" and right at the botto
m of the screen"'
3920 PRINT" If the fungus reache
s the level of"'" your bat the g
ame will be over. You"'" score
points for hitting blocks."'" Pr
ess space to scroll."
3930 REPEATUNTILINKEY-99
3940 PRINT'" The game will be o
ver also if your"'" bonus falls
to zero. The little symbol"'" ("
;CHR$250;") in the high score tab
le means that"'" it is a name pu
t in by the computer."'" These a
re your keys:"'" Z.....Left"'
3950 PRINT" X....Right"'" Retur
n....Freeze game"'" *....Unfreez
e game"'" ?....Abort game"'" S.
...Sound off"'" S....Sound on"'
" Press space to start the game."
''''
3960 A$="...Spinning Frustration
...devised and programmed and mus
ic composed by Nicholas Jameson (
Aged 11)...For the Lancaster Roya
l Grammar School minibus appeal..
..."
3970 COLOUR129:COLOUR0
3980 REPEAT
3990 PRINTTAB(2,28);MID$(A$,1,36
)
4000 TIME=0:REPEATUNTILTIME=5 OR
INKEY-99
4010 A$=A$+MID$(A$,1,1)
4020 A$=MID$(A$,2,158)
4030 UNTILINKEY-99
4040 ENDPROC
4050 DEFPROCreport
4060 C%=0
4070 *FX4,1
4080 SC%=?&C4C
4090 SC1%=?&C4D
4100 SC1%=SC1%*256
4110 SC%=SC%+SC1%
4120 B0%=?&C53
4130 B01%=?&C54
4140 B01%=B01%*256
4150 B0%=B0%+B01%
4160 SC%=SC%+B0%
4170 C0%=?&8E
4180 C01%=?&8F
4190 C01%=C01%*256
4200 C0%=C0%+C01%
4210 SC%=SC%-C0%
4220 IFSC%<HI%(1) PRINT'''"   Yo
ur score is ";SC% ELSE PRINT'''"
  Please enter your name ":PROCta
ble
4230 PRINT'''"      High scores:"
4240 FORI%=10TO1STEP-1
4250 IFC%=I% PRINT'"  ";HIX(I%);
".....";:D%=POS:E%=VPOS:PRINT:
GOTO4270
4260 PRINT'"  ";HI%(I%);".....
.";S$(I%)
4270 NEXT
4280 IFC%>0 PROCname
4290 PRINTTAB(4,28);"Press space
for another go"'"     or press
I for instructions"
4300 *FX21,0
4310 REPEAT:key=GET:UNTIL key=AS
C"1" OR key=ASC"i" OR key=32
4320 IFkey=32 I%=0 ELSEI%=1
4330 ENDPROC
4340 DEFPROCtable
4350 FORI%=10TO1STEP-1
4360 IFSC%>HIX(I%) PROCshift:END
PROC
4370 NEXT
4380 ENDPROC
4390 DEFPROCshift
4400 C%=I%
4410 FORB%=1TOI%
4420 S$(B%-1)=S$(B%)
4430 HIX(B%-1)=HI%(B%)
4440 NEXT
4450 HI%(I%)=SC%
4460 ENDPROC
4470 DEFPROCname
4480 *FX21,0
4490 S$(C%)=""
4500 L%=0
4510 VDU31,D%,E%
4520 REPEAT
4530 key=GET
4540 IFkey=13 PRINTTAB(3,3);"
                    ":UNTILkey=13
ELSE IFkey=127 AND L%=0:UNTILO EL
SE IF key=127 S$(C%)=MID$(S$(C%),
1,LEN(S$(C%))-1):L%=L%-1:VDU127:U
NTILO ELSE IFL%<13 VDUkey:S$(C%)=
S$(C%)+CHR$key:L%=L%+1:UNTILOELSE
GOTO4570
4550 ENDPROC
4560 SOUND1,-15,10,3
4570 UNTILO
4580 DEFPROCtitle
4590 VDU19,1,3;0;
4600 PRINTTAB(8,12);"By Nicholas
Jameson..."
4610 VDU31,10,14
4620 A$="Spinning Frustration"
4630 MOVE320,504
4640 FORL%=1TO20
4650 T&70=ASC(MID$(A$,L%,1))
4660 A%=10:X%=&70:Y%=0:CALL&FFF1
4670 VDU23,224
4680 FORK%=0TO7
4690 VDU?(&71+(K%DIV2))
4700 NEXT
4710 VDU23,225
4720 FORK%=0TO7
4730 VDU?(&75+(K%DIV2))
4740 NEXT
4750 VDU224,8,10,225,11
4760 DRAW320+(L%*32),504
4770 SOUND1,-15,40+(L%*8),2
4780 TIME=0:REPEATUNTILTIME=6
4790 NEXT
4800 VDU19,1,3;0;
4810 TIME=0:REPEATUNTILTIME=300
4820 ENDPROC
```



Have suitcase, will compute

Leslie Goodridge shows how to make sure your Electron is always ready for action

IN common with most home computers, the Electron suffers from the drawback that several items need connecting each time it is used, resulting in a tangle of wires and equipment. One solution is to leave everything permanently set up in a room. More often than not however, the Electron will be left in a cupboard and brought out infrequently because of the hassle of setting it up each time.

The answer is to make a custom built carrying case, transforming your machine into a portable go-anywhere computer. The case described here has the keyboard, tape recorder, disc drive and so on permanently fixed inside and the machine's RGB, video and UHF/TV outlets are extended to the rear.

Power is supplied by a single mains lead which plugs into a connector at the back of the case. Further socket outlets at the rear provide power for the other items such as the monitor or a printer. Additionally, the front section of the lid folds back flat to provide a base on which to place the monitor.

When not needed the carrying case can be stored upright, taking up very little floor space, yet within less than two minutes your computer can be ready to use.

The materials used to construct the case are relatively cheap and are easily obtainable from any good DIY or hardware store. The front, back and side rails for the base unit and lid are made from 15mm thick planed timber, with the base and lid sections of 6mm plywood. The lid sections are linked with three small brass hinges; others connect the rear lid section to the back rail of the base unit.

Four quick release toggle catches secure the lid sections to the base, and a lie-flat handle is fastened to the front rail for carrying. Rubber feet are glued to the bottom of the case and, if needed to the back rail to keep

the case upright when stored.

Small brackets made by bending strips of aluminium are used to hold the Electron and other items securely in the case, as shown in the photographs. These brackets are fastened to the base with small countersunk bolts and nuts. Other items such as the Plus 3's transformer can be secured with nuts and bolts passing through rivet holes. Sufficient brackets should be used to prevent equipment from sliding around or falling out of the case.

Once you have determined the dimensions for the case (see panel), cut out all the sections shown in the diagram. Box joints are used where shown as they are strong and simple to make. The remaining joints for the lid are 90 degree or 45 degree butt joints. All sections are glued together with PVA wood adhesive which is strong enough for all but the very sloppiest of box joints.

Start construction by gluing the base unit together. This is best done on a flat surface such as a table – but beware of marking it! Assemble and glue the four sides together then glue them to the base, making sure that everything is square. Use plenty of glue to ensure good adhesion and wipe off any excess.

Weigh the sides down to make sure they fit properly on to the plywood base, and hold joints together with sticky tape until the glue has set.

Next make up the two lid sections. These should be glued together on top of the base unit to ensure an accurate fit. Use strips of polythene to prevent the two lid sections from sticking to each other or to the base.

The back rail of the front lid section will first need shaping to fit flush up against the rear lid. Sticky tape should again be used to hold the lid sections on to the base, as well as holding joints firmly together until the glue sets. Finally, glue the lid sections on to their plywood tops.

When everything has thoroughly set plane or sand off any excess material and round off any sharp corners and edges to give a smooth finish. At this stage it is best to cut the holes at the rear of the case for the

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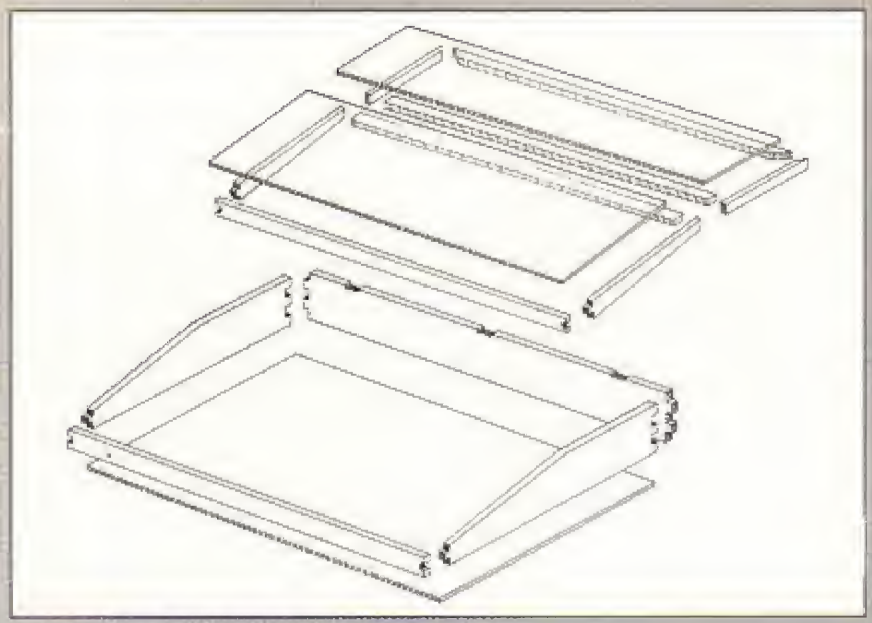


Exploded diagram of the main components of the case

Front view of the case showing the internal layout of the components

Fastening components into the case using aluminium brackets and small bolts

Shaping up

The exploded diagram and photographs show the case's basic design. No absolute measurements are given as these will depend on how much equipment it is to hold. So the first step is to assemble all your equipment to determine the various dimensions. There are however, a few points to bear in mind when doing this.

- The front rail of the base unit should be about 35mm high, which is approximately the height of the front of the Electron's keyboard. Any higher than this will cause trouble when typing. It may also be necessary to remove a section from the bottom rail, with a corresponding extension in the lid to allow easy insertion of discs – particularly with the Plus 3.
- The overall internal height of the case with the lid closed must be sufficient to allow clearance for any cartridges or interfaces. Allowance must also be made at the back of the case for the internal electrical connections.
- The front section of the lid must be sufficiently deep to take a monitor, but not so deep that it overhangs excessively when folded back. Between 9in to 11in is about right.
- Don't just design the case for your present equipment – make allowances for later expansion.

◀ *From Page 23*

electrical connections, described later.

You will also need to drill 0.75in or 0.5in ventilation holes spaced 0.5in apart in the plywood base. you can decide where to put them by roughly assembling the equipment in the case and noting where the equipment vent holes are. All this completed, give the case a few coats of varnish.

The case is now ready to assemble. Connect the front and rear lid sections together with three small brass hinges, flush fitted so that the front section hinges back on to the rear section. The rear lid section should then be hinged to the back rail of the base unit. If you feel confident and want a neat finish you can recess the hinges. If you are not too confident, simple flush fitting is quicker and more accurate.

When the lid is fitted attach the quick release toggle catches, then fit the carrying handle and rubber feet. The final stage of assembly involves fitting the equipment into the case and fastening it down, but before this is done make all the electrical connections.

All the items needed can be obtained from electronics suppliers such as Tandy, or mail order firms like Maplins and Watford Electronics. Wiring up is best done with the lid removed to give better access.

To extend the Electron's RGB, video and UHF/TV inputs you will need two phono plugs, a dual phono jack board, a 6 pin flanged DIN

socket, a 6 pin DIN plug and also single and 5 core screened lead.

Cut holes in the left-hand side of the back rail and fit the dual phono jack board and 6 pin flanged DIN socket. These should then be connected to the Electron using the appropriate plugs and screened lead.

The video and UHF/TV outlets are simple to wire up using the single screened lead and phono plugs. The DIN connectors for the RGB output are a little more involved, as there are six connections to solder at each end.

Using the 5 core screened lead, join pins 1 to 6 on the socket to pins 1 to 6 on the plug, with pin 5 connected to the cable's screening. As a rough guide you will need two metres of single and one metre of 5 core screened lead.

The mains input into the case is made using IEC/CEE connectors – the sort used on electric kettles.

To link up to the mains you will need a 13 amp 3 pin plug, four metres of 13 amp mains cable, an IEC/CEE panel mounted inlet connector and free socket, both with screw terminals. You will also need a single or dual gang 13 amp 3 pin socket outlet and a surface mounting terminal block.

Fit the flanged IEC/CEE inlet connector and 13 amp socket outlet into holes cut in the back rail, as shown in the photographs. They should be as close together as possible, but not so close to the phono connections to cause shorting.

Using colour coded 13 amp mains wire connect the live, neutral and earth terminals on the IEC connector to the 13 amp socket outlet. At the same time run wires to the surface mounted terminal block which should be fastened in a convenient location.

This terminal block allows the tape recorder or disc drive power supply to be wired easily into the mains input. If these items have moulded-on plugs they will first need cutting off. The alternative is to place additional socket outlets inside the case for them to plug into.

It is very important that the electrical connections inside the case are insulated and properly isolated with a cover, so that there are no exposed wires. A cover can be made from 6mm plywood, as shown in the photographs. The screws securing it to the back rail should pass through wooden posts to insulate them from mains wiring.

If you wish, you can also cut an aperture in the back for the printer cable to pass through. When not needed it can be closed off with a hinged aluminium plate.

Finally, make up the mains lead from 13 amp 3 core cable fitted with a 13 amp 3 pin plug at one end and a IEC/CEE socket at the other. This lead like any others you have, can be stored inside the case when not in use.

When all the electrical connections have been completed arrange your Electron and other items inside the case and fasten them down with the aluminium brackets and bolts. Replace the lid and your carrying case is complete.

And now you have a truly portable computer and there's no excuse for it languishing in a cupboard ever again!

Back view of the case showing the electrical components, hinges and toggle catches

Internal cover in place over the electrical wiring

Internal wiring layout with the cover removed

Autumn

THE rain is once again cascading through the straw roof, flooding the keep, and Archimedes is beginning to gain his winter plumage – sure signs that the fall is with us. Once more we dust off our Electrons to while away long autumn evenings as we tax our cerebral reserves and battle to become ever better adventurers.

I am often asked which games are the most difficult to solve and whether the most complex are necessarily the best. This is a tricky question to answer, because the difficulty – or frustration factor – of an adventure can be due to many things and not all of them necessarily good.

Clever plot and tricky riddles certainly increase the difficulty, but so, too, do unmappable mazes, illogical puzzles and crazy random factors – such as the dwarf in Sphinx Adventure or the sea in Savage Island I.

Anyway here are the most taxing adventures I have come across on the Electron, and by each I suggest the reason for the difficulty:

The Ferryman Awaits: A massive jaunt with excruciating puzzles which only become obvious after finishing it. By far the most difficult game I have played.

Savage Island I: Uncontrollable random factors operate and make this game infuriating.

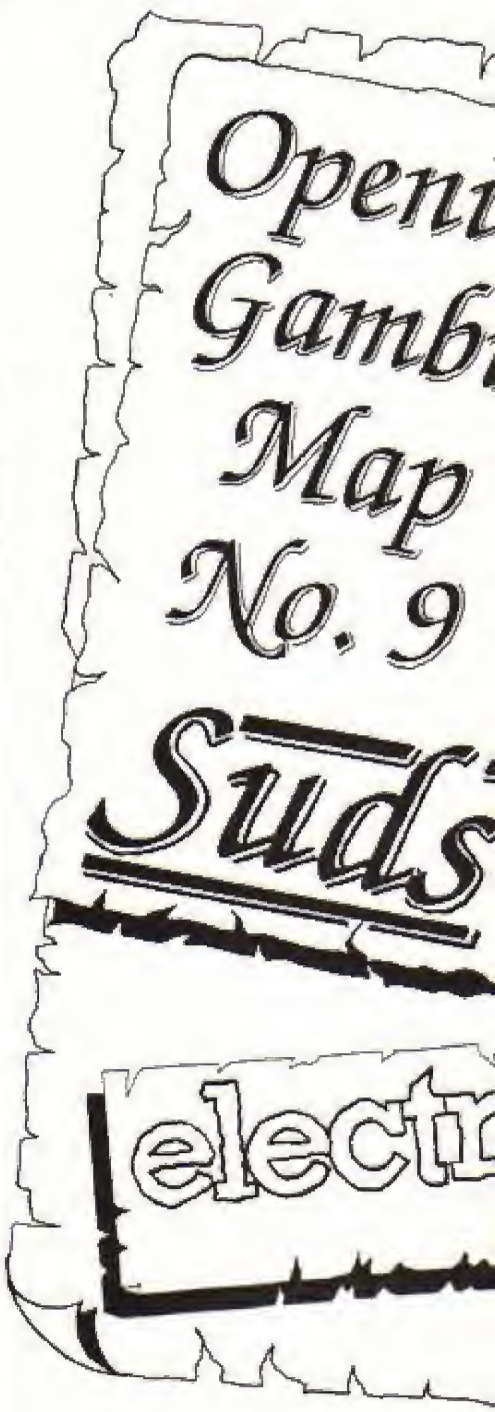
Village of Lost Souls (the original Magus version): The whole adventure can be explored from the outset and no order of puzzle solving is apparent. However, the atmosphere and plot are stunning.

Sphinx Adventure: No Save Game feature and that blasted dwarf make progress staccato.

Acheton: Its sheer size of more than 350 locations – and quirky humour make it a devil to solve.

On another tack, it seems that the trend this past year has been for Electron adventurers to turn their hand to writing their own games. This has no doubt been partly due to a dearth of releases from the top adventure houses since last Christmas, but also there is a certain logic and good sense in turning adventuring experience to productive purpose.

Of a couple of dozen games which have come my way this year, four particularly stand out head and shoulders above the rest. I must begin by thanking Jonathan Gates of



Problems Solved

This month I am featuring an assortment of tips to help you manipulate some of the objects in that most difficult of adventures, The Ferryman Awaits. These tips supplement those given in the March 1987 edition. Next month I will treat you to some more inside information on this taxing adventure.

Acolytes: Push the priest's body into the snake pit, then follow the weird disciples.

Lamp: In the storeroom. It is not used as the skull provides your light source.

Ledge: In the cell. EXAMINE LEDGE reveals the flint.

Flint: A weapon to kill the guard. Exchange at the pool for the magic sword.

Cell: To escape from the cell first get the sharp flint. Shout to attract the guard who opens the door, then kill him.

Guard: Leave his body in the cell and exit. Close the door then go and collect the skull. On return you will find fungus growing on his body.

Skull: Shake the pole in the courtyard to reveal the skull. Take it to the cell and put the skull on the ledge. A green light shines from its eye sockets and provides a light source in the stone tree area.

Floppy hat: One of the two magic transport devices. It works only in certain locations such as the underworld wind-swept plain. Get the hat in the temple waiting room. To operate it WEAR HAT, NORTH, GET HAT, LOOK.

Statue: If you are in the temple, PUSH STATUE opens up a gap giving access to the tower roof, and a section where the parrot and magic compass/box are. To get inside and collect the robe the gap must be closed.

Iceball: Release by going east to the walkway, then south on to a sloping roof. Escape from the ball by immediately going north back to the walkway, then west. The iceball falls into the mud lake and generates a mist.

Compass: The ivory box or model of compass, is found in the small chamber, which is south and down from the balcony. It gives a course on the underworld plain.

Bottle of blood: Ascend the altar and drop the guard's corpse. The bottle rolls into the snake pit. Collect it and go on to the river. The bottle activates the pentagram in the final show-down.

Robe: Return to the temple, pull the statue to close the gap. Go to the bottom of the slope, climb the rope and approach the statue from the rear. The priest's robe is inside. Wear the robe and carry the scythe to scare the demons guarding Agrogorggan.

Guards on the bridge: Cross the tower bridge and the guards spear you. But, if you are one of the living dead, this has no effect and the guards flee, dropping the wooden spear.

Boots: Soft leather sea boots found at the marble-lined pool. Wear them to enter the cave and to stop the roof collapsing when you collect the cube.

Death's scythe: In the chamber under the tree. SAY DEATH, who, shocked by the ravages of time, drops his scythe – the only weapon effective against Agrogorggan.

Time: After getting the scythe, SAY TIME. Old Man Time appears, this undoes the effects of the time lapse. Now climb the stone tree.

almanac

Nottingham for his swashbuckling pirate adventure, **Sea Queen**, which he has produced in 32k and 64k form.

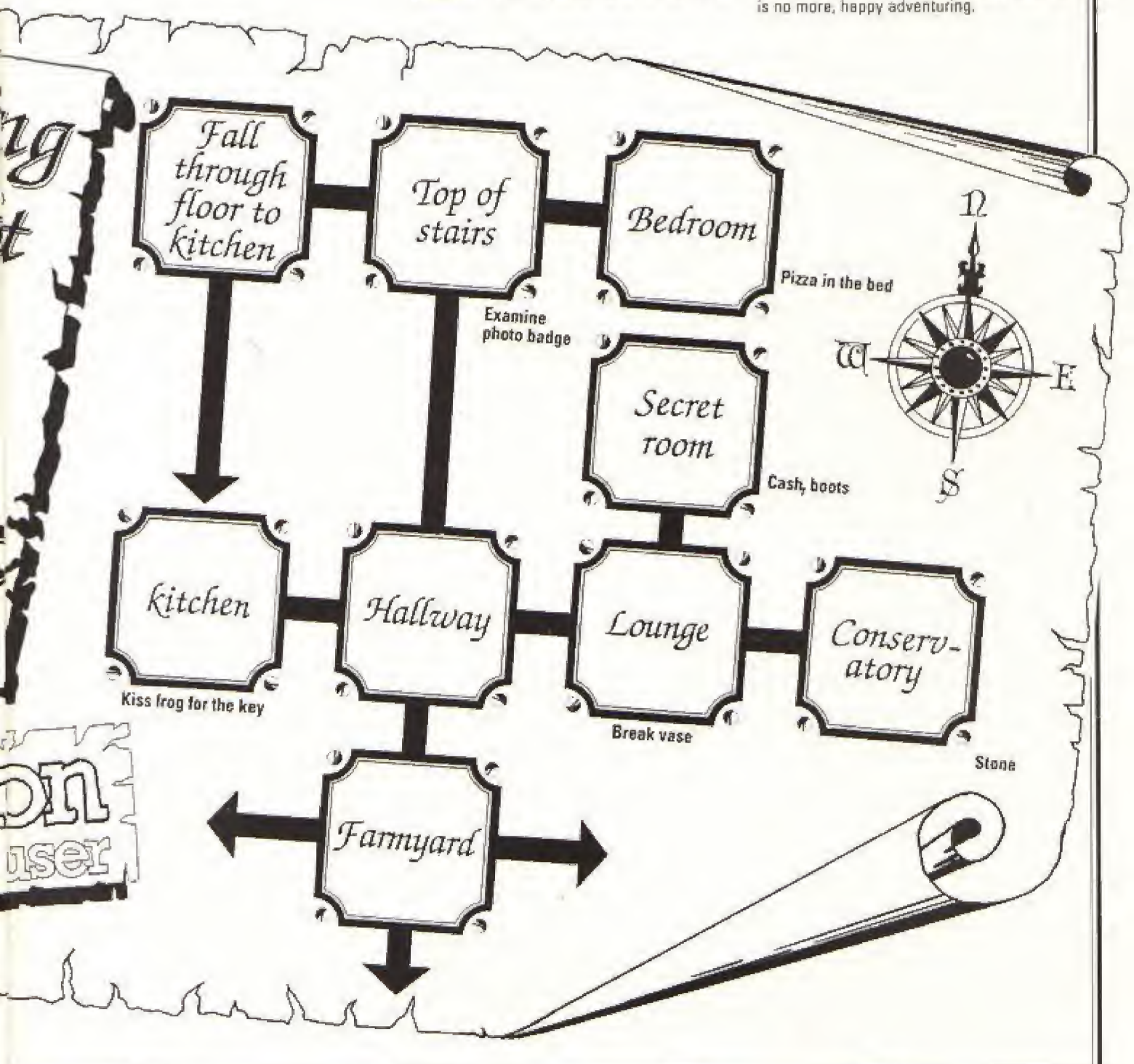
I also particularly liked a machine code epic called **Rawksley Manor** by Andrew Stewart of Penrith. This game encapsulated a certain air of Larsoft style in its room descriptions and was a jolly good jaunt to boot. Another excellent submission is **Prisoner of War** from Mark Richardson of Essex. This World War II escapade is cleverly written and with some careful tidying up of spelling could be a best seller.

However, perhaps marginally the best of the batch is a game called **Funworld** written by David Wilson and his two sons Jon and Paul – who have called themselves Esprit Software. This excellent jaunt is set in a theme park and your task is to rescue grandad while solving a selection of interesting puzzles.

I can thoroughly recommend all four adventures. So if any software company would like to market one or all of these pure text games, could they contact me directly and I will put them in touch with the respective authors.

Finally, this month's featured map is of the opening scenario to Riverdale's excellent spoof adventure Suds. I hope this helps any wayfarers stuck at the outset of this real rib tickler.

Next month I continue this series with a guide to the opening to Epic's early classic, Castle Frankenstein. So until forever autumn is no more, happy adventuring.



Overture and Beginners

Many times during the past three years I have mentioned the strength or limitations of the parser to various adventures. It is a subject I have discussed with you and one to which I gave much space for the best part of 18 months to a glossary of adventuring terms. It is therefore probably appropriate that we draw to a close this series of help for beginners by discussing in more detail the part a parser plays in an adventure.

First off, just what does "a parser" mean? It comes from the word parse which means to describe. So an adventure parser is the way the game's artificial intelligence has been manipulated to make your command interaction understood by both computer and human. In simple terms it is the extent to which you are allowed to make yourself understood.

In the early days of Electron text adventuring – Sphinx Adventure is a golden example – a game parser was likely to accept only two words of command at a time. Usually this was in the form of a verb followed by a noun, such as GET APPLE or OPEN DOOR. This style still restricts games written by adventure creation utilities like The Quill.

But that wasn't the only constraint. Limitations of computer memory and underdeveloped programming ability also meant the adventure's vocabulary had to be drastically curtailed.

For example if you knew the correct action to a particular situation was to slide a piece of newspaper under a door, you may have struggled in vain to find the right combination of words to accomplish the action.

This was not because you didn't know what to do, but because the program required absolute precision in wording. SLIDE NEWSPAPER, SLIDE PAPER, ENTER NEWSPAPER, SHOVE PAPER and many other combinations would perhaps come to no avail. When all the time the simple but elusive PUSH PAPER would do the trick.

Such programs still find their way on to the market even now, although thankfully they have become increasingly rare.

As time passed adventure programmers became more adept at machine code routines and text compression and sophisticated parsers made adventures seem a whole lot more realistic and logical to play. The Robico games are excellent examples of adventures with advanced parsers.

The possibilities were pushed still further by extensions in the Electron's ram memory by Mode 7 adaptors or the Slogger Master Ram Board. Now the wealth of Level 9 classics were open to Electron adventurers.

These developments also meant extended vocabularies which allow you to use a range of alternative words to achieve an action and still meet success. For instance the acceptable adventure synonyms for DROP may now include: REMOVE, LEAVE, PUT DOWN, FREE, RELEASE, LOWER, TAKE OFF, EMPTY, THROW DOWN, PLACE and so on.

Modern day parsers – especially in the Robico, Level 9, Topologika and Heyley adventures – allow quite complex actions such as: TAKE ALL BUT THE GREEN PEN, OPEN THE RED BOOK AND WRITE IN IT WITH THE BLUE PEN, THEN GET EVERYTHING AND GO NORTH.

The use of ALL, IT and EVERYTHING certainly saves wear and tear on tired adventurers' fingers, but ironically enough the occasions you need to use such powerful and complex commands turn out to be far more infrequent than you might have thought. In fact most adventurers still fall back on the old-fashioned verb-noun input for reasons of pace and simplicity. Old habits die hard.

Despite this, some words and actions still remain common in almost all adventures, so I have made up a quick reference guide to popular adventuring commands – with common synonyms where required.

Common adventuring commands

Break	*smash, hit, cut, destroy*
Close	*shut*
Dig	
Drink	*sip, taste*
Drop	*remove, leave, put, release, lower, empty*
Eat	
Examine	*search, look, inspect, read*
Fill	
Get	*take*
Give	
Go	*move, run, walk, climb, follow, swim, enter, leave, exit, ride*
Help	
Inventory	*inv, i*
Kiss	
Light	*turn on, on*
Make	*build*
Open	*unlock*
Push	*pull, slide, move, lift, raise*
Score	
Sit	
Stand	
Talk	*ask, tell, question*
Turn	*operate, start, press, switch*
Undo	*oops, og*
Wait	
Wear	

An offer you can't refuse

A new add-on board complete with a spreadsheet and word processor is tested by Roland Waddilove

THE prices of Electron software and hardware add-ons are falling so fast it seems that they'll soon be given away free with packets of cornflakes. Software Bargains has bought huge stocks of Acornsoft's View and Viewsheet, and although this superb duo sells quite well on its own, Software Bargains has made them even more attractive by bundling them with a plug-in hardware add-on board like a Plus 1 without the cream plastic case. And at a rock bottom price too.

There are three packages: PCB (the hardware add-on) with one cartridge port plus View and Viewsheet for £29.95; PCB with one cartridge and printer port plus View and Viewsheet for £36.95; and PCB with two cartridge ports and printer port plus View and Viewsheet priced at £39.95.

Upgrades are available to take you from the bottom of the range model PCB to the top.

In addition you can also buy the Electron Advanced User Guide for only 99p – a bargain, and a must for programmers or anyone who likes to tinker with the micro's operating system.

View and Viewsheet should need no introduction, but for those who haven't yet met them, they are rom cartridge-based software. View is a word processor for writing letters, memos and documents, while its relative, Viewsheet, is a spreadsheet designed for manipulating figures, handling financial accounts and so on.

Both represent the most powerful software of their type available for the Electron and together make up a flexible home business system.

The hardware add-on is a bare printed circuit board (PCB) which plugs into the back of the Electron. Apart from the squarer shape and lack of analogue joystick port, it is basically the same as the PCB inside a Plus 1.

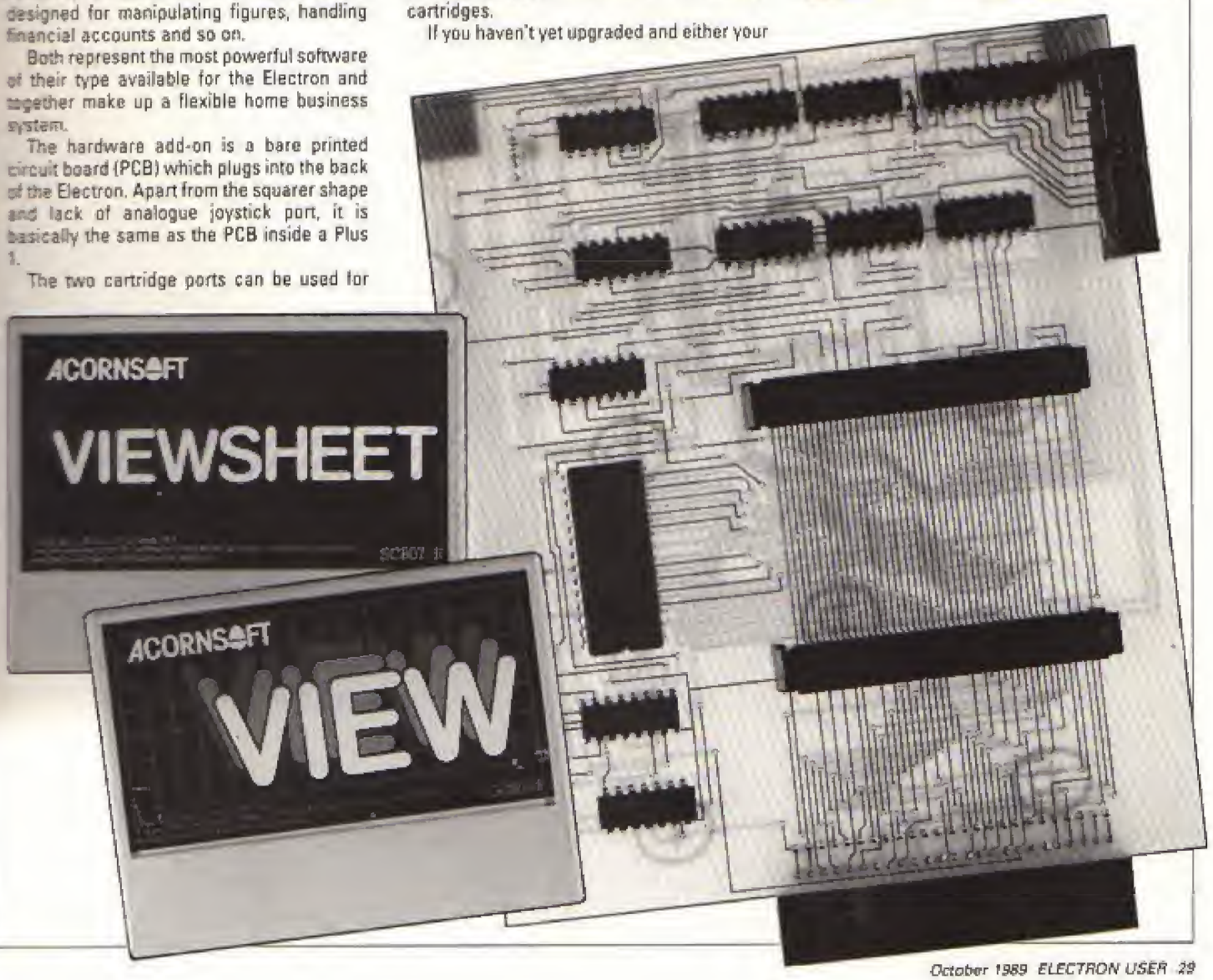
The two cartridge ports can be used for View, Viewsheet or any other cartridges you have. A Pres AP4 disc interface and Cumana drive set up also functioned without a hitch when plugged into the cartridge ports. The printer port operates as expected too.

There are two disadvantages with the hardware. First, there isn't a case, so the bare PCB hangs from the back of the Electron. It's easy to knock and damage, by no means as robust as a cased unit like the Plus 1. Then again, it hasn't a joystick port. However, I didn't miss that as there aren't many games that have a joystick option – and anyway, I prefer to use the keyboard.

This kit isn't a lot of use if you already upgraded your basic Electron with a Plus 1 and you would be better off scouring the adverts for cut-price View and Viewsheet cartridges.

If you haven't yet upgraded and either your money won't stretch to a Plus 1 and View plus Viewsheet, or you're not bothered about the lack of matching Acorn cream plastic casing, this package represents good value for money. Recommended.

Product: PCB (cartridge port) plus View and Viewsheet
Price: £29.95
Product: PCB (cartridge port, printer port) plus View and Viewsheet
Price: £36.95
Product: PCB (two cartridge ports, printer port) plus View and Viewsheet
Price: £39.95
Supplier: Software Bargains, Northwood House, North Street, Leeds LS7 2AA.
Tel: 0532 436300



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WHEELIES!

Jump astride your jet bike and roar down the highway in Lyn Davies' hazardous scrolling arcade game

JET BIKE is a fast paced arcade game set in the future. After World War Three destroyed most of the towns and villages long, straight highways were built to connect the rebuilt cities.

Unfortunately, due to the poor post nuclear economic climate, parts have crumbled away over the years leaving large gaps, exposing power cables lying beneath the surface.

All this makes your job of motorcycle messenger very difficult. As you speed along the highways on your jet bike taking messages from city to city you must use considerable acrobatic skills to negotiate the crumbling road.

The screen scrolls rapidly from right to left and your aim is to keep the jet bike on the highways. Jump the gaps and power cables, for they drain your bike's power. When that's all gone the bike will explode. A replacement can be supplied, but write off too many and the messenger company will sack you.

Use Z to brake, X to accelerate and Return to jump. You can also use Z and X while in the air, a technique which may be needed to negotiate certain sections. If you keep getting killed early on hit both Shift keys hard. This has no effect on the game, but it might make you feel better.

```
   1REM Jet Bike
   2REM By Lyn Davies
   3REM (c) Electron User
  10MODE5:DIM code 3500:VDU19,3,
6;0;:ENVELOPE2,1,4,-4,4,10,20,10,
126,0,0,-126,126,126:ENVELOPE1,12
9,15,8,3,10,10,10,126,0,0,-126,12
6,126
  20?&70=&E0:?&71=&6E:?&900=20:?
&901=0:?&902=0:?&903=0:?&904=0:?&
907=247:?&908=0:?&78=&10:?&79=&71
:?&7A=&10:?&7B=&76:?&90A=0:?&90D=
0
  30VDU23,224,255,254,128,128,12
8,128,128,128,128,23,225,128,128,128,
128,128,128,128,128,0,23,226,0,1,1,1,
1,1,1,1,23,227,1,1,1,1,1,1,127,25
5
  40PROCdraw:PROCmach:CALLeno:CA
LLbar:CALLrac:CALLffo:END
  50DEFPROCdraw:VDU19,1,0;0;:VDU
19,2,0;0;:VDU19,3,0;0;:COLOUR129:
CLS:VDU5:FORF=900TO1024STEP92:FORE
=16TO1264STEP92:MOVEE,F:GCOL3,3:V
DU224,10,8,225:GCOL3,1:VDU8,11,22
6,8,10,227:NEXTE:NEXTF
  60GCOL0,1:MOVE108,736:DRAW1184
,736:PLOT85,1184,832:MOVE108,736:
DRAW108,832:PLOT85,1184,832:GCOLO
,0:MOVE108,748:DRAW1184,748:DRAW1
184,824:GCOL0,2:MOVE108,748:DRAW1
08,824:DRAW1184,824
  70GCOL0,0:MOVE96,96:DRAW1178,9
6:PLOT85,1178,664:MOVE96,96:DRAW9
6,664:PLOT85,1178,664:GCOL0,2:MOV
E92,96:DRAW92,664:DRAW1178,664:VD
U19,1,1;0;:VDU19,2,3;0;:VDU19,3,6
;0;:FORE=&67B0TO&67AF:READA:?E=A:
NEXT:ENDPROC
  80DATA224,64,0,4,0,68,204,0,22
4,128,0,12,0,136,238,0,224,64,0,4
,0,68,68,0,224,128,0,8,0,136,238,
0,224,160,0,14,0,170,170,0,224,16
0,0,14,0,204,170,0
  90DEFPROCmach:FORpass=0TO2STEP
2:P%=code
 100[OPTpass
 110.car:EQUD&00F0000F:EQUD&0103
0600:EQUD&C4E67760:EQUD&03677766:
EQUD&11011110:EQUD&0B070E1D:EQUD&
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F00EEEE:EQUD&0F0F000F:EQUD&0CCE02
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 120.road:EQUD&FF0FF0F0:EQUD&FF0
```

Turn to Page 32 ►

◀ From Page 31

```
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:EQUD&OOOOOOOO
 250EQUD&OEOO80EO:EQUD&OOEE2200:
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#8:BNEhw:RTS
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STA&7A:STA&78:LDA#&76:STA&7B:LDA#
&71:STA&79:RTS
 510.eno:LDA#1:STA&90D:LDA#one MO
D256:STA&7C:LDA#one DIV256:STA&7D:LDA#&CO:STA&905:LDA#2:STA&906:L
DA#road MOD256:STA&7E:LDA#road DI
V256:STA&7F:RTS
 520.owt:LDA#two MOD256:STA&7C:LD
A#two DIV256:STA&7D:LDA#&CO:STA&
905:LDA#2:STA&906:LDA#oadr MOD256
:STA&7E:LDA#oadr DIV256:STA&7F:RT
S
 530.ert:LDA#taw MOD256:STA&7C:L
DA#taw DIV256:STA&7D:LDA#&CO:STA&
905:LDA#2:STA&906:LDA#adro MOD256
:STA&7E:LDA#adro DIV256:STA&7F:RT
S
 540.set:LDA&90D:CMP#1:BEQeno:CM
P#2:BEQowt:CMP#3:BEQert:CMP#4:BEQ
reit:CMP#5:BEQjds:RTS
 550.jds:JSRq:LDA#1:STA&90D:JSR&
et:RTS
 560.reit:LDA#fier MOD256:STA&7C
:LDA#fier DIV256:STA&7D:LDA#&CO:S
TA&905:LDA#2:STA&906:LDA#daor MOD
256:STA&7E:LDA#daor DIV256:STA&7F
:RTS
 570.scr:LDA&7C:CLC:ADC#O1:STA&7
C:LDA&7D:ADC#O:STA&7D:JSRtes:RTS
 580.tes:DEC&905:LDA&905:BEQest:
RTS:.est:DEC&906:LDA&906:BEQtse:R
TS:.tse:INC&908:LDA&908:CMP#4:BNE
set:BEQned:RTS
 590.ned:JSRe:JSRbar:LDA#O:STA&9
08:INC&90D:JSRset:RTS
 600.e:LDA#7:LDX#h MOD256:LDY#h
DIV256:JSR&FFF1:RTS:.h:EQUD&OOO2O
001:EQUD&OO140064
 610.tab:EQUD&OOO1OOO1:EQUD&OOO1
0064:RTS:.jp:LDA#7:LDX#tab MOD256
:LDY#tab DIV256:JSR&FFF1:RTS
 620.bat:EQUD&OOO2OOO1:EQUD&OOO1
0044:RTS:.poo:LDA#7:LDX#bat MOD25
6:LDY#bat DIV256:JSR&FFF1:RTS
 630.abt:EQUD&FFF10000:EQUD&OOO4
0004:RTS:.opo:LDA#7:LDX#abt MOD25
6:LDY#abt DIV256:JSR&FFF1:RTS
 640.bar:LDA#&F7:STA&907:LDX#O:.
ke:LDA#&E1:STA&6OE8,X:INX:CPX#&F8
:BNEke:RTS
 650.end:LDA#O:STA&909:JSRmess:.
tx:LDA#&OF:LDX#1:LDY#O:JSR&FFEE:L
DA#&B1:LDX#&9D:LDY#&FF:JSR&FFF4:B
CSog:BCCtx:RTS
 660.og:JSRe:JSRmess:LDA#O:STA&9
08:LDA#&EO:STA&7D:LDA#&14:STA&900
:LDA#&6E:STA&71:JSRend:JSRbar:RTS
 670.oop:LDX#O:.si:LDY&907:LDA#&
OF:STA&6OE8,Y:DEY:STY&907:INX:CPX
#8:BNEsi:JSRpoo:LDA&907:CMP#&FF:B
EQpow:RTS
 680.pow:JSRpxe:JSRopo:JSRsync:J
SRpxe:JSRopo:JSRsync:JSRpxe:JSRop
o:JSRsync:JSRpxe:JSRpxe:JSRsync:J
SRpxe:JSRi:JSRend:RTS
 690.mess:LDY#O:.fp:LDAspace,Y:E
OR&78FO,Y:STA&78FO,Y:INY:CPY#&58:
BNEfp:RTS:.q:LDX#O:.v:LDA#&FF:STA
&7820,X:INX:CPX#&FF:BNEv:RTS:.i:L
DX#O:.v:LDA#&OO:STA&7820,X:INX:CP
X#&FF:BNEv:RTS
 7001
 710NEXTpass
 720ENDPROC
```

NEW! TEN of the BEST EDUCATIONAL GAMES

Packed full of some of the best educational games from the pages of *Electron User*, the new Ten of the Best Educational Games is the ideal way for your children to learn about maths, spelling, anagrams, telling the time, general knowledge, and even the rudiments of running a business!

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Crocodile – Unscramble the letters of a word before the crocodile gets you.

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Hiss – Improve your spelling by guiding a snake round the garden eating up words in the right letter order.

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Write your own arcade smashes using the

ARCADE GAME *Creator*

Arcade Game Creator is a suite of programs for the Electron and BBC Micros. Taken from the pages of *Electron User*, it lets you into the secrets of writing fast-action arcade games, and provides you with a number of utilities to make design and programming easier.

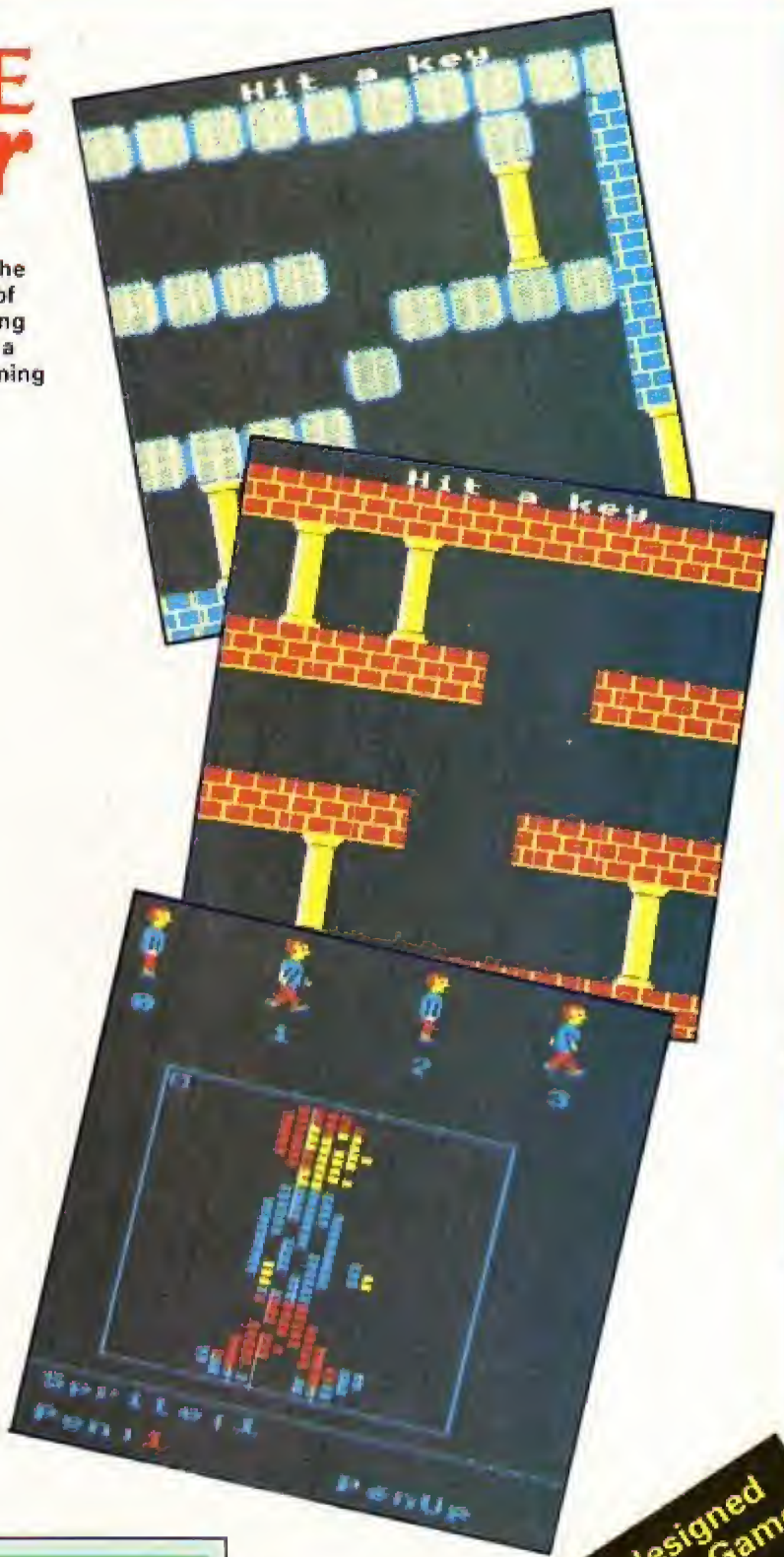
Among the programs are:

- A Mode 5 sprite editor that lets you design your own multi-coloured characters.
- A selection of fast print routines that will move sprites both in front or behind other objects on the screen.
- Map generators that will squeeze a Mode 5 screen into 8 bytes!
- Scrolling maps.
- Score update and printing routines.

. . . and much, much more.

To help you make the most of the Arcade Game Creator, you will also get a comprehensive manual based on the original series.

Written in an easy to read style and with many illustrations and screen shots, it contains all the information you need to create and animate sprites, to design backgrounds and to link the two together into a complete arcade game.



Screens designed using Arcade Game Creator

If you are an aspiring games programmer, this is an offer you simply cannot afford to miss!

Arcade Game Creator

Tape + manual £9.95

TO ORDER PLEASE USE THE FORM ON PAGE 45

RENEGADE ROBOTS

Anthony Houghton whisks you into the future to battle with a robot army

THE year is 2057 and robot technology is now well established. There are robot shop assistants, housemaids, factory workers, roadsweepers... you name 'em. People live a life of leisure now that most jobs have been robotised.

However, a disgruntled scientist at the robot manufacturing plant has been tampering with the three laws of robotics implanted into every robot's positronic brain. These state that:

- A robot must not harm a human being or through inaction, allow harm to come to one.
- A robot must always obey a command from a human being, provided this doesn't contravene the first law.
- A robot must not allow any harm to come to itself, provided this doesn't contravene the first two laws.

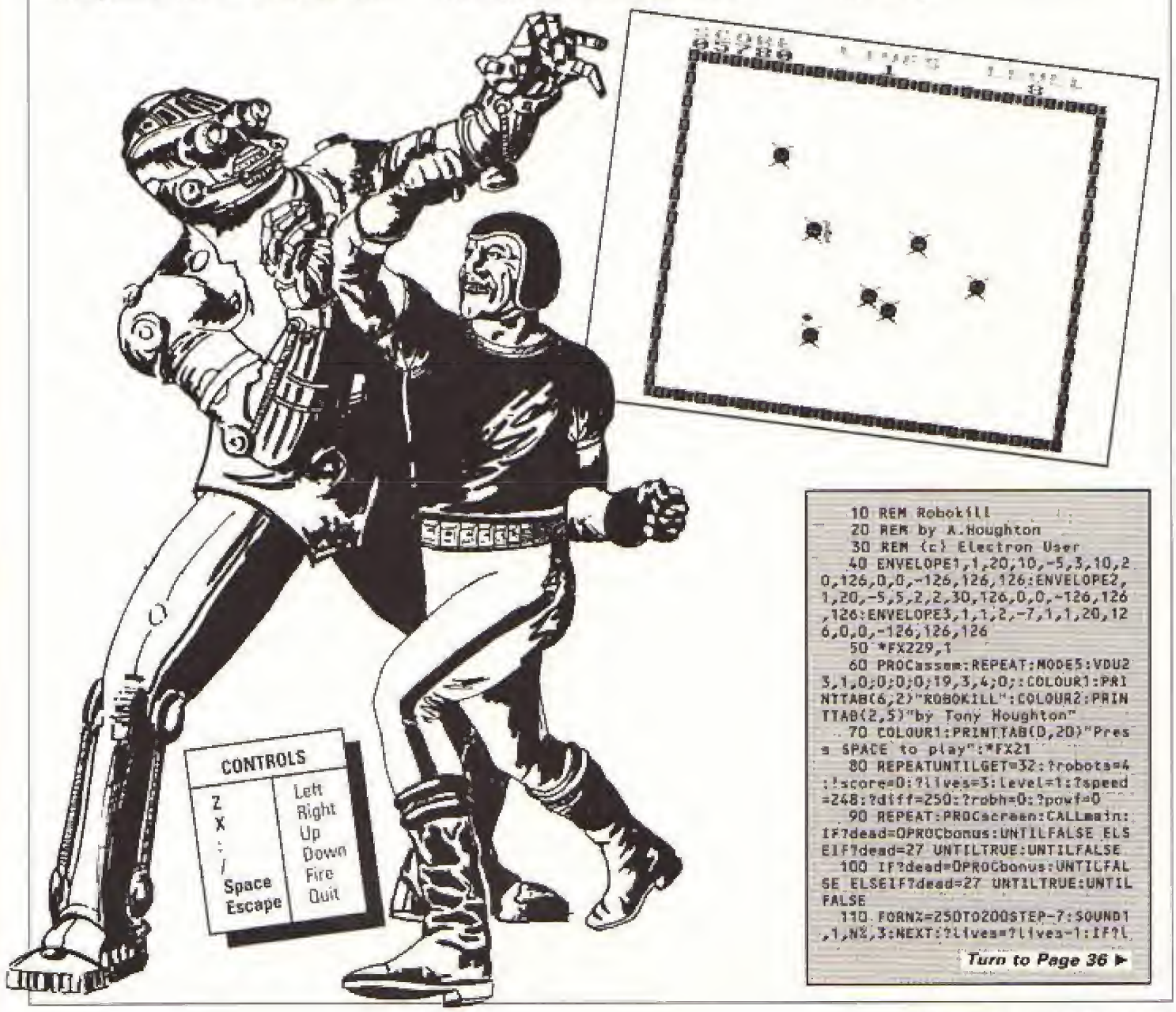
These prime directives have been deleted from the robots' brains and they're on the rampage causing havoc and destruction everywhere. They won't obey commands and have little regard for human life.

An elite squad of highly trained men, you among them, are assigned the task of destroying the renegades. Armed with a machine gun, you have to destroy as many robots as possible. You can fire only in the direction you are facing, so if you are being chased you have to spin round quickly and fire.

Extra firepower can be picked up by running over the POW cannisters which enable you spray bullets all around by firing in eight directions at once. However, they last for only 20 shots so play it cool. Save it until there is only one robot left on the screen, then collect it and shoot the robot.

At the start of the next screen you'll then have 19 shots left which can be used to wipe out most of the mechanical monsters.

Good hunting.




```
   10 REM Robokill
   20 REM by A.Houghton
   30 REM (c) Electron User
   40 ENVELOPE1,1,20,10,-5,3,10,2
0,126,0,0,-126,126,126:ENVELOPE2,
1,20,-5,5,2,2,30,126,0,0,-126,126
,126:ENVELOPE3,1,1,2,-7,1,1,20,12
6,0,0,-126,126,126
   50 *FX229,1
   60 PROCassem:REPEAT:MODE5:VDU2
3,1,0;0;0;0;19,3,4;0;:COLOUR1:PRI
NTTAB(6,2)"ROBOKILL":COLOUR2:PRIN
TTAB(2,5)"by Tony Houghton"
   70 COLOUR1:PRINTTAB(0,20)"Pres
s SPACE to play":*FX21
   80 REPEATUNTILGET=32:?robots=4
:!score=0:?lives=3:level=1:?speed
=248:?diff=250:?robh=0:?powf=0
   90 REPEAT:PROCscreen:CALLmain:
IF?dead=0PROCbonus:UNTILFALSE ELS
EIF?dead=27 UNTILTRUE:UNTILFALSE
  100 IF?dead=0PROCbonus:UNTILFAL
SE ELSEIF?dead=27 UNTILTRUE:UNTIL
FALSE
  110 FORN%=250TO200STEP-7:SOUND1
,1,N%,3:NEXT:?lives=?lives-1:IF?L
```

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◀ From Page 35

```
ives<>&FF CALLplvs
  120 PROCd(130):?powf=0:UNTIL?li
ves=&FF:VDU28,4,18,15,16,12,17,1,
26:PRINTTAB(5,17)"GAME  OVER":PRO
Cd(300):UNTILFALSE
  130 VDU28,4,18,15,16,12,17,1,26
:PRINTTAB(5,17)"GAME  OVER":PROCd
(300)
  140 DEFPROCbonus:FORN%=10TO100ST
EP10:SOUND1,2,N%,2:NEXT
  150 VDU28,4,18,15,16,12,17,1,26
:PRINTTAB(5,17)"BONUS:";:COLOUR2:
bonus=level*200:IFbonus>1200 bonu
s=1200
  160 PRINTRIGHT$("000"+STR$bonus
,4);:PROCd(40)
  170 REPEAT:bonus=bonus-10:PRINT
TAB(11,17)RIGHT$("000"+STR$bonus,
4);:SOUND&10,0,0,0:CALLinsc:CALLp
sc
  180 SOUND&10,-15,6,1:UNTILbonus
=0:level=level+1:?diff=251-level
DIV3:IFTdiff<246 ?diff=246
  190 ?robh=0:?robots=3+level DIV
2:IF?robots>24 ?robots=24
  200 IF?powf<>255 ?powf=0
  210 IF?speed<252 AND level/2=Lev
el DIV2 THEN?speed=?speed+1
  220 PROCd(50):ENDPROC
  230 DEFPROCscreen:CLS:X%=1:Y%=1
6:FORA%=&5A80TO&5BB0STEP16:!ns=&A
480000+A%:CALLprint:NEXT
  240 FORA%=&7EC8TO&7FE8STEP16:!n
s=&A480000+A%:CALLprint:NEXT
  250 X%=2:Y%=8:FORA%=&5A80TO&7EC
0STEP&280:!ns=&A480000+A%:CALLpri
nt:NEXT
  260 FORA%=&5CF8TO&7FF8STEP&280:
!ns=&A480000+A%:CALLprint:NEXT
  270 ?manx=18:?many=13:FORN%=0TO
23:N%?robf=0:NEXT:FORN%=0TO?robot
s-1-?robh:N%?robf=&FF
  280 REPEAT:X%=RND(37)-1:Y%=RND(
27)-1:UNTILX%<16ORX%>20ORY%<11ORY
%>15
  290 N%?robx=X%:N%?roby=Y%:N%?ro
bdx=N%MOD2:N%?robdy=(N%MOD2)EOR1:
?tr=N%:CALLrobdir
  300 CALLcalc:!ns=!cad:?d=0:d?1=
&A:X%=2:Y%=16:CALLprint:NEXT
  310 COLOUR1:PRINTTAB(0,0)"SCORE
"SPC(2)"LIVES"SPC(2)"LEVEL":COLOU
R2:CALLpsc:PRINTTAB(16,1);level:C
ALLplvs
  320 ?mandat=&C0:?mdx=0:?mdy=1:F
ORN%=1TO10:!os=&6C98:X%=2:Y%=16:P
ROCd(5):*FX19
  330 CALLdelete:!ns=&9C06C98:X%=
2:Y%=16:PROCd(5):*FX19
  340 CALLprint:NEXT
  350 FORN%=0TO39:N%?bul1=0:NEXT:
IF?powf=0 ?powf=70
  360 ENDPROC
  370 DEFPROCd(T%):TIME=0:REPEATU
NTILTIME>T%:ENDPROC
  380 DEFPROCassem:RESTORE1340:FO
RN%=&900TO&A5FSTEP4:READA$:!N%=EV
AL("&"+A$):NEXT
  390 DIMX%2000,xtabl 40,xtabh 40
,ytabl 30,ytabh 30,bulx 40,buly 4
0,budx 40,budy 40,bulf 40
  400 FORX%=0TO36:A%=X%*8:xtabl?X
%=A%MOD256:xtabh?X%=A%DIV256:NEXT
:FORY%=0TO27:A%=&5BC8+&140*Y%:yta
bl?Y%=A%MOD256:ytabh?Y%=A%DIV256:
NEXT
  410 DIMrobx 24,roby 24,robdx 24
,robdy 24,robf 24
  420 manx=&60:many=&61:mandat=&6
2:mdx=&63:mdy=&64:fx=&65:fy=&66:f
dx=&67:fdy=&68:ff=&69
  430 ns=&70:d=&72:os=&74:cad=&76
:diff=&78
  440 y=&7E:dead=&7F:tx=&80:ty=&8
1:speed=&82:tb=&83:tr=&84:seed=&8
5:robots=&86:robh=&87
  450 IFINKEY-256=1THENtimer=&29F
ELSEtimer=&2A0
  460 FORP=0TO2STEP2:P%=Q%:[OPTP
  470 .sprite STXtx:STYty:JSRdele
te:LDXtx:LDYty:JMPprint
  480 .print STYy:.prl1 LDYy:.pri
2 DEY:LDA(d),Y:STA(ns),Y:CPY#0:BN
Eprl2
  490 LDAd:CLC:ADCy:STAd:LDAns:CL
C:ADC#&40:STAns:LDAns+1:ADC#1:STA
ns+1:DEX:BNEprl1:RTS
  500 .delete STYy:.del1 LDYy:LDA
#0:.del2 DEY:STA(os),Y:CPY#0:BNEd
el2
  510 LDAos:CLC:ADC#&40:STAos:LDA
os+1:ADC#1:STAos+1:DEX:BNEdel1:RT
S
  520 .calc LDAxtabl,X:CLC:ADCyta
bl,Y:STAcad:LDAxtabh,X:ADCytabh,Y
:STAcad+1:RTS
  530 .manmv LDXmanx:LDYmany:JSRc
alc:LDAcad:STAos:LDAcad+1:STAos+1
:LDA#0:STAtx:STAty
  540 LDA#&81:LDX#&9E:LDY#&FF:JSR
&FFF4:TYA:BEQnl:LDAmanx:BEQnl:DEC
tx
  550 .nl LDA#&81:LDX#&BD:LDY#&FF
```

```
:JSR&FFF4:TYA:BEQnr:LDAmanx:CMP#3
6:BEQnr:INCtx
  560 .nr LDA#&81:LDX#&B7:LDY#&FF
:JSR&FFF4:TYA:BEQnu:LDAmany:BEQnu
:DECty
  570 .nu LDA#&81:LDX#&97:LDY#&FF
:JSR&FFF4:TYA:BEQnd:LDAmany:CMP#2
6:BEQnd:INCty
  580 .nd LDAtx:ORAty:BNEmvman:JM
Ppman:.mvman LDAtx:CMP#&FF:BNEnmf
l:LDAmandat:AND#&3F:STAmandat:JMP
somd
  590 .nmfl CMP#1:BNEnmfr:LDAmand
at:AND#&3F:ORA#&40:STAmandat:JMPs
omd
  600 .nmfr LDAty:CMP#&FF:BNEnmfu
:LDAmandat:AND#&3F:ORA#&80:STAman
dat:JMPsomd
  610 .nmfu LDAmandat:AND#&3F:ORA
#&C0:STAmandat
  620 .somd LDAtx:STAmdx:CLC:ADCm
anx:STAmanx:LDAty:STAmdy:CLC:ADCm
any:STAmany:LDAmandat:EOR#&20:STA
mandat
  630 .pman LDXmanx:LDYmany:JSRca
lc:LDAcad:STAns:LDAcad+1:STAns+1
  640 LDAmandat:STAd:LDA#9:STAd+1
:LDX#2:LDY#16:JMPsprite
  650 .fire LDAfx:CLC:ADCfdx:STAf
x:LDAfdx:CMP#1:BNEnfr:INCfx:.nfr
LDAfy:CLC:ADCfdy:STAfy:LDAfdy:CMP
#1:BNEnfd:INCfy
  660 .nfd LDAfx:CMP#37:BCCokfx:.
nokf RTS:.okfx LDAfy:CMP#27:BCSno
kf
  670 LDY#0:.sebl LDAbulf,Y:BEQfe
b:INY:CPY#39:BCCsebl:RTS:.feb LDA
  680 LDAff:CMP#&FF:BEQrobff:LDA#
&40:JMPmanif:.robff LDA#7:LDX#las
e MOD256:LDY#lase DIV256:JSR&FFF1
:LDA#&58:.manif STAd
  690 LDXfx:LDYfy:JSRcalc:LDAcad:
STAns:LDAcad+1:STAns+1:LDA#&A:STA
d+1:LDX#1:LDY#8:JMPprint
  700 .powf BRK:.powt BRK:.powx B
RK:.powy BRK
  710 .shoot LDA#&81:LDX#&9D:LDY#
&FF:JSR&FFF4:TYA:BNEmsht:RTS:.msh
t BITpowf:BMIpowsht:LDA#&80:STAff
:LDAmanx:STAfx:LDAmany:STAfy:LDAm
dx:STAfdx:LDAmdy:STAfdy:JMPfire
  720 .powsht LDA#&80:STAff:LDA#&
FF:STAfdy:.psl1 LDA#&FF:STAfdx:.p
sl2 LDAmanx:STAfx:LDAmany:STAfy:L
DAfdx:ORAfdy:BEQnpsd
  730 JSRfire:.npsd INCfdx:LDAfdx
:CMP#2:BNEpsl2:INCfdy:LDAfdy:CMP#
2:BNEpsl1
  740 DECpowt:BNEspf:LDA#0:STApow
f:LDA#30:STApowt:.spf RTS
  750 .lase EQUW2:EQUW3:EQUW80:EQ
UW2
  760 .bullets LDY#0:STYtb:.bullp
 LDAbulf,Y:BEQnxbul:LDAbulx,Y:TAX
:LDAbuly,Y:TAY:JSRcalc:LDAcad:STA
os:LDAcad+1:STAos+1
  770 LDYtb:LDAbulx,Y:CLC:ADCbudx
,Y:STAbulx,Y:CMP#37:BCSdebl:LDAbu
ly,Y:CLC:ADCbudy,Y:STAbuly,Y:CMP#
27:BCCndebl
  780 .debl LDA#0:STAbulf,Y:LDX#1
:LDY#8:JSRdelete:JMPnxbul
  790 .ndebl JSRhit:LDAbulf,Y:BEQ
nxbul:LDAbulf,Y:CMP#&FF:BEQrobb:L
DA#&40:JMPmanb:.robb LDA#&58:.man
b STAd
  800 LDAbulx,Y:TAX:LDAbuly,Y:TAY
:JSRcalc:LDAcad:STAns:LDAcad+1:ST
Ans+1:LDA#&A:STAd+1:LDX#1:LDY#8:J
SRsprite
  810 .nxbul INCtb:LDYtb:CPY#40:B
CCbullp2:RTS:.bullp2 JMPbullp
  820 .hit LDAbulf,Y:CMP#&FF:BEQr
obbul:LDX#0:.hitl1 LDArobf,X:BEQn
ht1:LDAbulx,Y:SEC:SBCrobx,X:CMP#2
:BCSnht1:LDAbuly,Y:SEC:SBCroby,X:
CMP#2:BCSnht1
  830 STXtr:LDA#0:STAbulf,Y:STAro
bf,X:LDX#1:LDY#8:JSRdelete:LDXtr:
LDAroby,X:TAY:LDArobx,X:TAX:JSRca
lc:LDAcad:STAos:LDAcad+1:STAos+1:
LDX#2:LDY#16:JSRdelete
  840 LDA#7:LDX#zap MOD256:LDY#za
p DIV256:JSR&FFF1:JSRinsc:INCrobh
:JSRpsc:LDXtr:LDYtb:.nht1 INX:CPX
robots:BCChitl1:RTS
  850 .robbul LDAbulx,Y:SEC:SBCma
nx:CMP#2:BCSnht2:LDAbuly,Y:SEC:SB
Cmany:CMP#2:BCSnht2:LDA#0:STAbulf
,Y:LDA#&FF:STAdead:.nht2 RTS
  860 .zap EQUW17:EQUW1:EQUW220:E
QUW5
  870 .mvrobs LDY#0:STAtr:.robml
LDArobf,Y:BEQnxrob:JSRrandom:AND#
3:BNEdcrd:JSRrobdir:.dcrd JSRrobm
v
  880 .nxrob INCtr:LDYtr:CPYrobot
s:BCCrobml:RTS
  890 .random LDAseed:ROLA:ROLA:R
OLA:SEC:ADCseed:EORtimer:STAseed:
RTS
  900 .robmv LDYtr:LDArobx,Y:TAX:
LDAroby,Y:TAY:JSRcalc:LDAcad:STAo
s:LDAcad+1:STAos+1
  910 LDA#0:STAd:LDA#&A:STAd+1:LD
Ytr:JSRrobc:BCCprob:JSRrobdir
  920 .prob LDArobx,Y:CLC:ADCrobd
x,Y:STArobx,Y:TAX:LDAroby,Y:CLC:A
DCrobdy,Y:STAroby,Y:TAY
  930 JSRcalc:LDAcad:STAns:LDAcad
+1:STAns+1:LDX#2:LDY#16:JSRsprite
  940 JSRrandom:CMPdiff:BCSrobsht
:RTS:.robsht LDYtr:LDA#&FF:STAff:
LDArobx,Y:STAfx:LDAroby,Y:STAfy
```

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MICRO MESSAGES

Winkle out those lost files

I MAY be able to offer a glimmer of hope to Kenneth MacLeod who wrote in August's issue for help with a corrupted disc containing valuable files. I have a disc recovery program which enables me to search through a disc track by track, sector by sector and resave any programs or parts of programs I can find to a new disc.

During operation it keeps pausing and waits for a key to be pressed after each section of data has been displayed on screen.

If Mr MacLeod has a program like this, but is unable to get it running because the first sector of the disc has been so badly corrupted that the format cannot be read, he should replace the corrupted disc with a good one and start the recovery program running.

It will read the format and he should continue scanning through the disc until the first sector has been read. Now, while the computer is waiting for a key to be pressed, he should replace the good disc with the corrupted one and press a key.

The computer will be fooled and carry on scanning the disc from sector two onwards. Of course if his disc is severely corrupted and error messages keep appearing it would not be wise for him to continue. – **Joan Barnard, Buckhurst Hill, Essex.**

● Thanks for the tip Joan. Our technique is to use a disc formatter. Run it and hit the Break key immediately after the first track has been formatted. Now you can use a disc editor to recover the contents. The only drawback here is that if the program you lost is stored on the first track it will be permanently destroyed, so your technique is much better as it leaves the original disc intact.

Several good disc toolkit programs are available. One of the best is Advanced Disc Toolkit from Pres.

Escape route from lock-ups

I HAVE been using an Electron for two years, primarily as a word processor. I have a Plus 1, AP4, View cartridge, single Cumana 5.25in disc drive and a Silver Reed EX34 typewriter operating as a printer.

I use it for normal correspondence, writing magazine articles and, more recently, have produced the text of two small books.

Soon after I upgraded the system I ran into an occasional fault when entering text. It would no longer be accepted, the cursor would stop flashing and the => symbol would appear.

Escaping to the command page and then back to the text page would enable me to input again, but about half the last line of text would have disappeared.

I now find that sometimes I cannot Escape as I did before, and have got around this problem by using the Break key. This has to be frequently pressed before anything happens. I get to a command page which reads Acorn Electron DFS *and I then press Break to get back to the normal command page.*

Usually I don't lose the text, but the last time I tried it I did. I now save more often. What can I do? – **Michael Ingham, Lincoln.**

● It is possible that you are experiencing trouble with the ULA chip. Keith Watts remedied his, he reported in our November 1988 issue, by opening his Electron, removing the ULA, sliding it back and forth in the carrier, then replacing it. However, never do this while the micro is plugged into the mains.

Advice needed on upgrades

I AM another computer-ignorant mum who could do with some advice. My two sons have an Electron which they have tired of as it is. We would like to buy a disc drive, but have no idea where we could get one, and more importantly, the cost.

Another problem is what we can do with our games tapes. If we get a disc drive can we transfer them from tape to disc?

We would also like to extend the computer's memory, which I'm told we can do with add-ons. However, again we need advice on what to buy, where to obtain it and the cost. Please can you help? – **Christine van Oorschot, Mold, Clwyd.**

● You will need to buy a Plus 1 and a disc interface in order to use a disc drive. All of these can be obtained from Pres who advertise every month in *Electron User*.

The cost of the equipment would vary, depending on which models you bought, but you could expect to pay somewhere in the region of £200. You have a choice of a 5.25in DFS or 3.5in ADFS system.

If you are primarily interested in games then go for the 5.25in system as besides being more available on this format you also have an opportunity to try out some BBC Micro software too. Not all of it will run of course, but some does.

Unfortunately, as most commercial games are copy protected you won't be able to transfer very many of them to disc. However, Pres is currently converting around 50 Superior Software titles to disc. Expect to see these in the run up to Christmas.

To extend the memory of your Electron to 64k we recommend the Master Ram Board which is available from Slogger for £49.95. Alternatively, a ram cartridge will add sideways ram, which is useful for rom software.

The Master Ram Board has the added advantage of speeding up the Electron to almost that of the BBC Micro.

Looking for Lisp lore

I HAVE been an Electron User *reader for many years and I recently bought a copy of the Lisp programming language on rom. I have tried without success to obtain a copy of the book Lisp Programming on the BBC Micro. Could you or any reader help me?* – **A. Ghatoori, London.**

● We can't find anyone advertising the book. However, Watford Electronics (0923 37774) advertise one called Lisp, the Language of Artificial Intelligence, which costs £13.95. This may help.

You'll find a Lisp programming tutorial in the June, July and August 1987 issues of *Electron User*.

Misleading instructions

A WHILE ago I was playing Space Harrier on a friend's Atari ST when I noticed that instructions were also given for a BBC/

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Electron version.

I wrote to Elite asking whether it was still available, as I didn't even know that it existed for the Electron. However, I didn't receive a reply and I can find no trace of it in the shops or mail order adverts. Do you know where I could obtain a copy? – **Christian Weber, Chester.**

● Space Harrier isn't available for the Electron. We don't know why there would be instructions for it – perhaps it had been planned and then the project was shelved before completion. Perhaps if enough Electron users write to Elite it will continue with its production.

Programs you can copy

I HAVE subscribed to Electron User *for several years, and am very grateful for the free monthly tape. I have begun saving some of the recent games on our school's BBC Micro network but my teacher has doubts since there is a copyright symbol in each program.*

Please could you tell me whether or not I am allowed to save them on the Econet? If not, I will wipe them, much to the disappointment of many friends who find them great fun – and a relief from word processing. – **Simon Dedley, Kettering, Northants.**

● We don't mind you using the programs at school as long as the copyright message stays on them and you are not making a profit by selling them.

Bear in mind that some of the programs published need instructions that can only be found in the magazine – so order a few extra copies for your school mates!

Giant step for an Electron

I HAVE been the owner of an Electron for nearly five years. It was originally bought to get the children interested in computing, but ended up being used only for games.

Lately I have been using an Apple Macintosh and an IBM PC for my work, mainly for producing spreadsheets and graphs using an excellent program called Exel Windows. I find this very helpful to collate and display data.

Is there a program of similar nature designed for the Electron? If so what hardware would I need to run it? What would I need to print it? Is it possible to use a mouse?

At present I only have the basic computer with an Acorn data recorder and a television with an RGB lead. Does Mini Office compare at all with Exel Windows? Finally, what will it all cost? – **V.J. Moore, Peterborough.**

● A humble Acorn Electron can't be compared to an Apple Mac system or even a PC. These two computers have a computing power several orders of magnitude greater than our micro. The software is correspondingly more powerful.

The most powerful Electron spreadsheet is Viewsheet, and at around £10-15 is very cheap indeed. Although far less powerful, Mini Office spreadsheet is still very useful for simple home accounts. The package consists of four programs – word processor, database, spreadsheet and graphics.

You won't need any further hardware to run Mini Office, although an Epson-compatible printer would be required to print any work. It is not possible to use a mouse with Viewsheet or Mini Office.

After having used Excell windows on a Mac you'll probably find Electron software too primitive to be of any practical use.

All programs printed in this issue are exact reproductions of listings taken from running programs which have been thoroughly tested.

However, on the very rare occasions that mistakes may occur corrections will be published as a matter of urgency. Should you encounter error messages when you type in a program they will almost certainly be the result of your own typing mistakes.

Unfortunately we can no longer answer personal programming queries concerning these mistakes. Of course, letters about suggested errors wil lbe investigated without delay, but any replies found necessary wil only appear in the mail pages.

Listings were not guilty

I AM writing to complain about the majority of programs you put into the magazine. They do not work.

My father and I spend many an evening typing into the computer, and when we run them we get syntax errors or No such variable *messages. The latest such program is Niel Cunningham's On to a Winner, from July's issue.*

After checking through the program twice we come to the conclusion that there is an error in the listing. Why do so many of these programs not work? – **Stewart McWilliam, Wigan.**

★ ★ ★

EACH month I look forward to Electron User. *I have retired and it gives me great pleasure to use my computer.*

I find the magazine a great help because I have not been taught anything about the computer. It gives me great pleasure to use some of the information and programs published.

I would appreciate it if someone could assist me concerning your Bingo game from the August issue. I have a Panasonic printer KX-P1081 and find it difficult to get the printer to print the cards.

I think that some of the printer instructions must be changed. As I am not an expert I would like someone to advise me what to do in relation to this particular machine. – **F.J. Campbell, Gateshead, Tyne & Wear.**

● We receive a number of similar letters each month. However, we can assure you that there isn't anything wrong with either of the listings published. In fact we have letters from other readers who have enjoyed using the programs.

Usually, we find that the program has been typed incorrectly. Check that you haven't misread a character for a similar looking one, such as a 0 for an O or an l instead of a 1.

On the odd occasions that there is an error you will find corrections printed in Micro Messages. The Bingo cards program was tested on the same Epson compatible printer that Mr Campbell uses.

Sister, but not a twin

DO you know what has happened to US Gold? I'm sure it would stand to gain enormous profit if it released Beach Head and Impossible Mission as budget games. And why doesn't it release Gauntlet for the Electron? (I'm with you Andy Duncan, May 1989*).*

Could you tell me what the main differences are between the BBC Micro and the Electron when it comes to software? Both have 32k memory but some games, such as Return of the Jedi and Moon Cresta, aren't available for the Electron.

Many thanks to Superior Software for releasing Commodore and Spectrum games such as Predator and Barbarian II. The biggest thanks go to you for bringing a very informative and varied magazine to my letterbox. My gratitude for the Supercharger program in the February issue.

Lastly, why not do some short reviews on old games? You would be able to regrade them and it may make Electron users think twice before buying an old game which has Electron User *Golden Game written on it.* – **B. Morris, Doncaster, South Yorkshire.**

● US Gold hasn't published software for the Electron for some time now. It is concentrating more on the 16 bit Atari ST, Commodore Amiga and Achimedes markets.

There are massive hardware differences between the Electron and BBC Micro. The innards are totally different, so any program directly accessing certain chips or ports may fail. The BBC Micro is faster and more flexible than the Electron which means that some games can't be converted.

Learning has never been such fun!

fun school 2

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- **Spell a Word:** Enjoy naming the pictures
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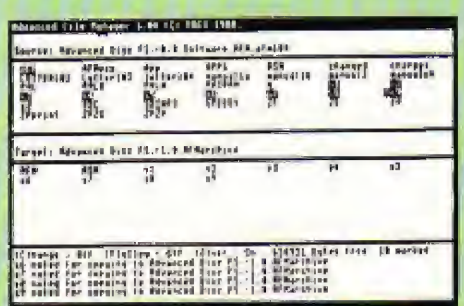

Screen picture shows AFM in Copy mode on Master Turbo

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DELETE – allows files to be marked and then deleted with one keystroke.
RENAME – allows one or more files to be marked and then renamed using a wildcarded name, ie one which varies with each file renamed. Thus you could rename s1, s2 and s3 to be s1_old, s2_old, and s3_old in one operation. . . and that's only the beginning! As well as using the whole of the original name you can also pick out individual characters to form part of the new name.
COPY – the strongest feature of AFM. It is a two stage copy routine. With both source and target directories shown on screen the files to be copied are marked. Once all the files have been marked copying is started and the computer can be left to get on with it!
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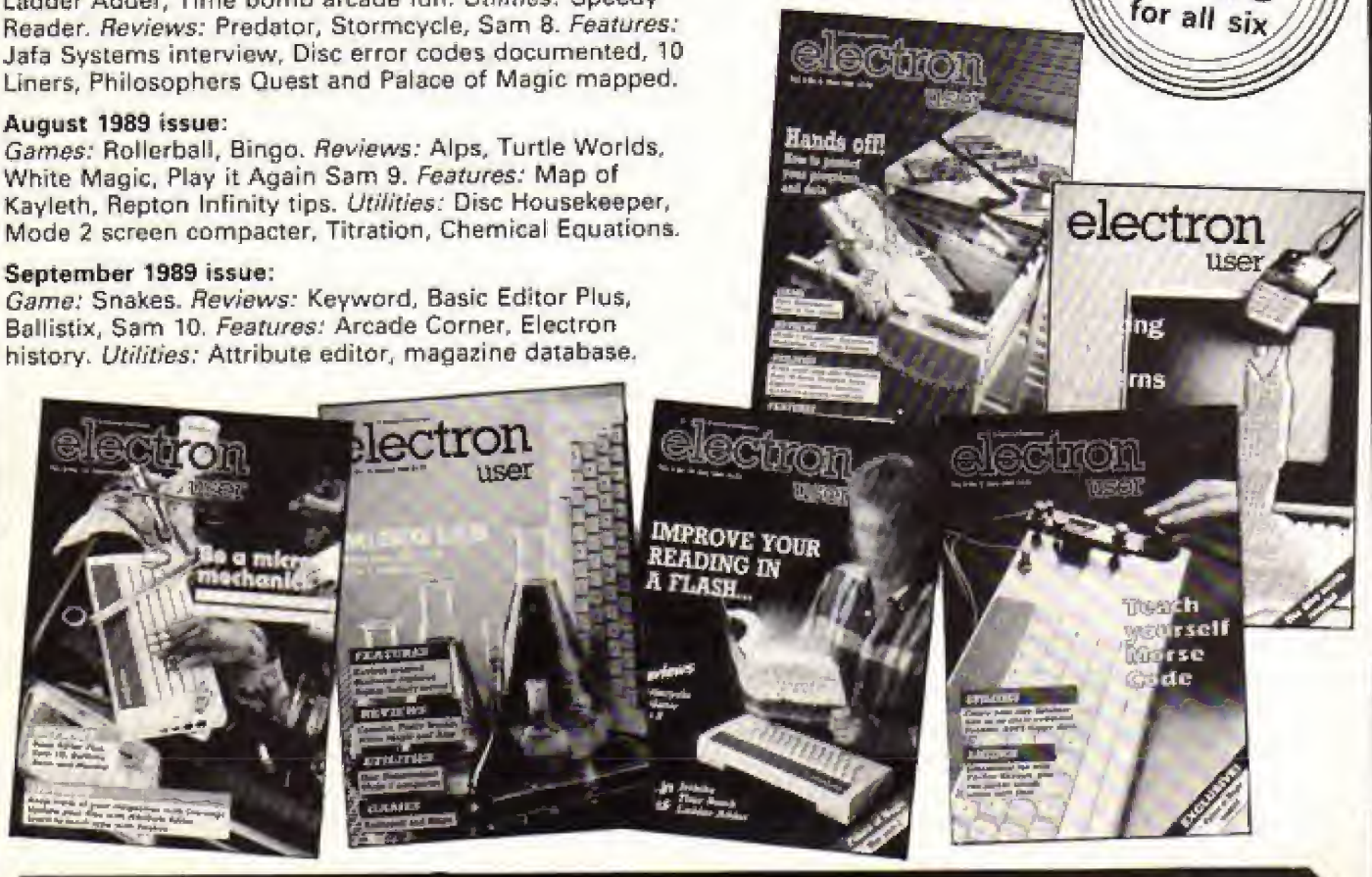

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10

LINERS

Catalogue of errors

HOW many times have you typed *> by accident when trying to catalogue a disc? If the answer to that is "Quite often" this handy utility from Stephen Wade of Stockport, Cheshire is just for you.

The program assembles a very short piece of 6502 machine code which, when stored in the correct place on the disc, can be used to repair the error as it occurs.

Rather than intercepting the main oscli routine in the computer, which would take up much valuable memory space, the utility is called up from disc whenever the *> error occurs.

```
 10 REM Repair for *> error
 20 REM by S.P.Wade
 30 FOR pass=0 TO 3 STEP 3
 40 P%=&900:[OPT pass
 50 LDX #cat MOD 256
 60 LDY #cat DIV 256
 70 JMP &FFF7
 80 .cat EQUS"CAT"+CHR$13
 90 ]:NEXT
100 OSCLI"SAVE > 900 "+STR$~P%
```

Because the flaw in the command is the > character the object code should be saved with the filename > in the library directory, so that the computer can locate it no matter which directory you happen to be in. (You can make the program automatically save the code in your library directory by simply altering line 100.)

Whenever you type *> the object code will be loaded into memory, starting at location &900, where it is then executed. Its function is to perform a *CAT by way of an oscli command and following that the code returns you to whatever you were doing before.

So there you have it – a simple problem simply rectified! Happy cataloguing.

Thanks for the memory...

```
   10 REM Display free memory
   20 REM by S.P.Wade
   30 FOR pass=0 TO 3 STEP 3
   40 P%=&900:[OPT pass
   50 LDY #0:.loop1 LDA str1,Y:CM
P #&FF:BEQ next1:JSR &FFEE:INY:JM
P loop1:.next1 LDA &06:SEC:SBC &0
2:TAX:LDA &07
   60 SBC &03:JSR hex1:TXA:JSR he
x1:LDY #0:.loop2 LDA str2,Y:CMP #
&FF:BEQ next2:JSR &FFEE:INY:JMP l
oop2:.next2 RTS
   70 .str1 EQUW &0A0D:EQUS"Memor
y free = &":EQUB &FF:.str2 EQUS"
bytes":EQUD &0A0D0A0D:EQUB &FF
   80 .hex1 PHA:AND #240:LSR A:RO
R A:ROR A:ROR A:JSR hex2:PLA:AND
#15
   90 .hex2 CLC:ADC #48:CMP #58:B
CC hex3:CLC:ADC #7:.hex3 JMP &FFE
3:]:NEXT
  100 OSCLI"SAVE MFree 900 "+STR$
~P%
```

OUR second utility this month also comes from Stephen Wade. This time he provides a program which reports how much free memory is left in the micro.

Anyone with a disc drive will no doubt have used the *FREE command from time to time to find out how much space is left on their disc. Well this program, called by typing *MFREE, tells us the number of free bytes of memory we have in hexadecimal format.

The program works by taking a look at the zero page locations for HIMEM and VARTOP, and from them works how much space there is in between.

You may wonder why the program is so bulky, and the answer is that the two routines that print the text are quite long. Nevertheless the program is still only 10 lines long.

You will find, of course, that the amount of free space will vary quite considerably in different modes – that is, you will have more free space in Mode 6 than in Mode 1 due to the different amounts of screen memory used.

In order to be able to use the program at any time from the disc, it is suggested that – like the cat repair utility – you store the object code in your library directory. You can again set the program to save the code automatically in the correct directory by altering line 100 as required.

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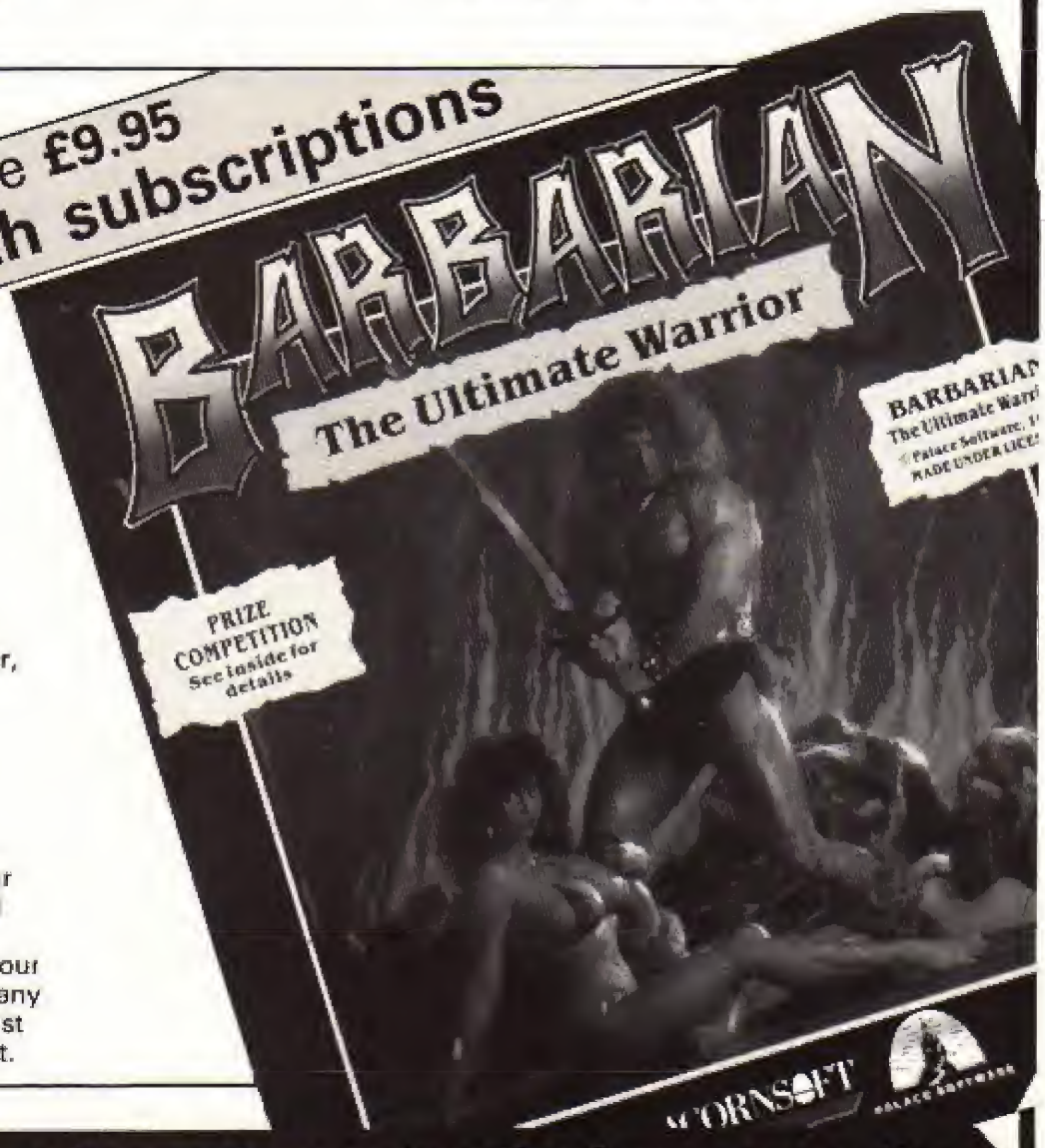

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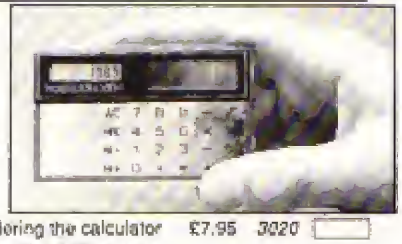

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 950 LDArobx,Y:SEC:SBCmanx:BEQhr
osh:BCCroshr:LDA#&FF:JMPhrosh:.ro
shr LDA#1:.hrosh STAfdx
 960 LDAroby,Y:SEC:SBCmany:BEQvr
osh:BCCroshd:LDA#&FF:JMPvrosh:.ro
shd LDA#1:.vrosh STAfdy:JMPfire
 970 .robdir LDYtr:LDArobdx,Y:BN
Evert
 980 JSRfolhor:BCCrts:JSRfolver:
BCCrts:JSRswahor:BCCrts:JMPswaver
 990 .vert JSRfolver:BCCrts:JSRf
olhor:BCCrts:JSRswaver:BCCrts:JMP
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Crright
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MProbc
 1030 .rright LDA#1:STArobdx,Y:JM
Probc
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down
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x,Y:LDAroby,Y:CMPmany:BCSrdown
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robc
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x,Y:CMP#37:BCSeorc:LDAroby,Y:CLC:
ADCrobdy,Y:CMP#27:.eorc RTS
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BEQnxmhr:LDArobx,Y:SEC:SBCmanx:CL
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DC#1:CMP#3:BCSnxmhr:LDA#&FF:STAde
ad:.nxmhr INY:CPYrobots:BCCmhrl:R
TS
 1110 .score EQU00:.lives BRK
 1120 .insc SED:LDAscore:CLC:ADC#
1:STAscore:LDAscore+1:ADC#0:STAsc
ore+1:CLD
 1130 LDAscore:BNEnilv:LDAscore+1
:AND#1:BNEnilv:LDAlives:CMP#9:BEQ
nilv:INClives:JSRplvs:.nilv RTS
 1140 .psc LDA#30:JSR&FFEE:LDA#10
:JSR&FFEE
 1150 LDAscore+1:JSRbyte:LDAscore
:JSRbyte:LDA#48:JMP&FFEE:.byte TA
X:LSRA:LSRA:LSRA:LSRA:JSRnib:TXA:
AND#&F:.nib CLC:ADC#48:JMP&FFEE
 1160 .plvs LDA#31:JSR&FFEE:LDA#9
:JSR&FFEE:LDA#1:JSR&FFEE:LDAlives
:JMPnib
 1170 .pow LDApowf:BNEpow2:DECpow
t:BEQpow1:RTS
 1180 .pow1 JSRrandom:AND#31:CLC:
ADC#2:STApowx:JSRrandom:AND#15:CL
C:ADC#5:STApowy:LDA#50:STApowt:LD
A#1:STApowf
 1190 LDA#7:LDX#pows1 MOD256:LDY#
pows1 DIV256:JSR&FFF1:JMPpow3
 1200 .pow2 BITpowf:BPLpow3:RTS
 1210 .pow3 LDXpowx:LDYpowy:JSRca
lc:LDAmanx:SEC:SBCpowx:CLC:ADC#1:
CMP#3:BCSpow3a:LDAmany:SEC:SBCpow
y:CLC:ADC#1:CMP#3:BCCpow3b
 1220 .pow3a DECpowt:BEQpow3c
 1230 LDAcad:STAos:LDAcad+1:STAns
+1:LDA#&20:STAd:LDA#&A:STAd+1:LDX
#2:LDY#16:JMPprint
 1240 .pow3b LDA#7:LDX#pows2 MOD2
56:LDY#pows2 DIV256:JSR&FFF1:LDA#
&FF:STApowf:LDA#20:STApowt:JSRinsc
:JSRinsc:JSRpsc:JMPpow3d
 1250 .pow3c LDA#0:STApowf:LDA#70
:STApowt
 1260 .pow3d LDAcad:STAos:LDAcad+
1:STAos+1:LDX#2:LDY#16:JMPdelete
 1270 .pows1 EQUW3:EQUW2:EQUW0:EQ
UW5:.pows2 EQUW3:EQUW2:EQUW30:EQU
W5
 1280 .main LDA#0:STAdead:LDAspee
d:STAtimer
 1290 .mainloop LDA#&81:LDX#&8F:L
DY#&FF:JSR&FFF4:TYA:BEQnasc:LDA#2
7:STAdead:RTS:.nasc
 1300 JSRmanmv:JSRbullets:JSRmhr:
JSRshoot
 1310 JSRwait
 1320 JSRbullets:JSRmvrobs:JSRmhr
:JSRpow:JSRwait:LDArobh:CMProbots
:BCSdone:LDAdead:BEQmainloop:.don
e RTS:.wait BITtimer:BMIwait:LDAs
peed:STAtimer:RTS
 1330 JNEXT:ENDPROC
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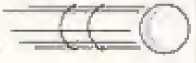
"Holed Out is great.... The game plays very well and the graphics are superb." Popular Computing Weekly, March 1989
"The best golf simulation I've ever seen on any Acorn machine." The Micro User, June 1989
"The Electron version is brilliant - it's almost the same as playing at Gleneagles. Unreservedly recommended."
A & B Computing Game of the Month, June 1989



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Prices opposite

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from The Fourth Dimension

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There are many types of ship you will encounter in your highly manoeuvrable futuristic submarine and you must develop your weaponry and equipment to deal with the challenges you will face. U.I.M. is an opportunity to step into another world. It will fascinate you for weeks and possibly months to come.

U.I.M. is disc only and will run on BBC B or B+ with sideways RAM and Master Series Computers.

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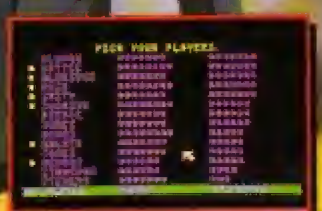

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